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ECONOMIC CONDITIONS IN MONTANA, 1984

Submitted to:

The Honorable Ted Schwinden
Governor of Montana

Edited by:

Phil Brooks, State Economist
Census and Economic Information Center
Montana Department of Commerce

March 1985

TED SCHWINDEN, GOVERNOR
1424 9TH AVENUE
STATE OF MONTANA
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HELENA, MONTANA 59620-0401

The Honorable Ted Schwinden, Governor of Montana, and
Members of the 49th Legislature

Dear Governor Schwinden and Members of the Montana House and Senate:

I would like to present you with the Economic Conditions in Montana, 1984 report. It represents an up-to-date analysis of Montana's economy and outside areas that affect it. The report includes overviews of the western Canadian and United States economies; an analysis of Montana's principal "basic" industries, a discussion of various economic growth theories used to describe Montana's economy, and a chapter on the growth of employment and earnings for Montana women. Chapter IV provides a summary overview of Montana's economy.

This report is one of several projects on the Montana economy sponsored by the Governor's Council on Economic Development in 1984 and emerges from Executive Order No. 15-83 creating the Council on Economic Development. The section of the Executive Order which pertains to this document reads:

> . . . the Council will assist in the preparation of materials on economic development issues, will prepare a biennial economic development and economic conditions report; and will sponsor appropriate research and other functions important to Montana's efforts in the areas of economic development. . .

I believe this Economic Conditions in Montana, 1984 report will provide valuable information and insight on Montana's economy to both public and private decision makers.

Sincerely,

W.E. "Buster" Schreiber, Chief
Governor's Council on Economic Development

WES/gp

Enclosure

publications & graphics

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ACKNOWLEDGEMENTS

The editor is indebted to a number of people who helped in various ways in the prepararation of this report.

This document was authored by economists and other researchers from the Montana University System, the Montana Department of Commerce, and the U.S. Department of Agriculture. More specifically, the authors of the chapters of the report are as follows:

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2. Paul Polzin, University of Montana, Chapter II - Overview of the United States Economy.

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CHAPTER I

MONTANA'S ECONOMIC GROWTH: THEORIES

by

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While there is no well defined or generally accepted theory about how Montana's economy grows, there are implicit in public policy and discussions at least four major ideas about the process. These four ideas, some of which overlap, identify key factors in Montana's economic growth: the growth of out-of-state exports, the availability of financial capital, the level of technology, and the business climate.

The following discussion outlines these hypotheses and the evidence and reasoning that supports them. It focuses particularly on their significance for the formulation of economic development policies. The discussion is by no means exhaustive. It is intended rather to give the reader a basic understanding of the major ideas shaping development policy in Montana.

A. The Export Base Model:

Perhaps the most explicitly developed hypothesis about Montana's economic growth is the export base (economic base) model. Many of the state's development policies have been shaped by this model, and it continues to be the most commonly accepted explanation of the state's economic pattern.

According to the export base model, industries may be grouped into two categories: basic and derivative. Basic industries sell products out-of-state or otherwise bring income into the state. Examples include agricultural products and tourism services, both of which are exported beyond Montana's borders. Because they export, basic industries grow in response to conditions of external demand, and their growth can therefore precede and promote the development of the state's economy.

Derivative industries include portions of the construction, wholesale/retail trade, transportation, and service sectors producing products demanded by income earners in the basic sector. Consequently, their growth rests on the growth of basic industry income. This notion is frequently expressed in terms of multipliers, which relate jobs or income earned in derivative industries to the basic industry jobs or income responsible for their existence.

The export base model has very clear implications for development policy. Since the state can do little to stimulate the external demand on which its exports depend, its efforts must therefore concentrate on improving the competitiveness of Montana producers in external markets.

For this reason, the state has given special emphasis to developing new markets, to creating an "identity" for Montana products, and to keeping transportation costs down. The latter is particularly important. Because of their distance from markets and because many of their products have low value per unit of weight, Montana exporters frequently find that transportation costs are a substantial proportion of the delivered price of their products. Coal is a prominent example. Since increased transportation costs so reduce export competitiveness, the state has made special efforts to maintain an efficient transportation system. The key role of basic industries is also reflected in the rules of the Economic Development Board, which give high priority to the investment of state funds in such industries.

The export base model appears to conform well with much of Montana's historical experience with economic growth. This experience has been marked by recurrent "booms", centered around the export of agricultural and forest products and, especially, minerals. Each boom brought derivative economic growth in its wake and all too often, when exports failed, general economic collapse as well. The ghost towns that dot Montana are reminders of our apparent dependence on exports for economic prosperity.

Unlike this earlier experience, however, the export base model seems less consistent with recent developments. Since at least 1970, both output and employment have grown more rapidly in derivative than in basic industries in Montana. The same has been true nationwide, as the country has gone through a broad shift towards an information- and service-based economy. This shift, which may be characteristic of a high-income economy, and the actual evolution of derivative industries, suggest that some part of derivative growth may in fact not be derivative at all, but part of a process of growth internal to the state. In this process, "derivative" activities simultaneously produce new output and create the demand for new production. If this is true, state policies which focus on the basic sector may miss the opportunity to promote more inwardly oriented growth.

The scope of such an opportunity is not easy to assess. In fact, all economic activities tend to expand and contract together and it is difficult to determine which of these changes causes the others. Studies of causality are inconclusive and it is quite simple to describe a process by which "derivative" growth causes "basic" growth.

The pattern of growth between and among industries probably involves multiple causes. Thus, while exports will undoubtedly continue to play a key role in Montana's economy, research and policy should aim as well at the identification and promotion of autonomous internal growth.

B. Capital Scarcity:

Increasing the stock of physical capital (plant and equipment) used to produce and distribute the output of an economy is critical to economic growth. This physical capital accumulation process is thought not only to increase the productive resources of the economy, but to serve as well as the vehicle for introducing new technology. It is evident that in Montana both the public and policy makers regard the scarcity or abundance of financial capital to fund physical capital accumulation as very important. Nowhere is this belief more clearly reflected than in programs to invest Coal Tax Trust Fund monies in the state.

While the purpose of state investment programs is to provide borrowers with money capital on better terms (either lower costs and/or more favorable loan conditions), their role in doing so is complicated by the fact that Montana's economy is quite "open". To some degree, all productive resources -- capital, labor, technology, and so forth -- flow into and out of the state in response to earnings opportunities. The extent of mobility in this process, however, varies greatly from one resource to another. Where mobility is high, earnings of productive resources tend to be the same in Montana as in national markets outside Montana. This is because when Montana earnings are above those in national markets, resources flow into the state, eliminating the differential. Similarly, if resources are under-rewarded in Montana, they will flow out of the state to markets where they can earn more.

In those segments of the capital (money) market where capital mobility is extremely high, this effect will sharply limit the ability of the state to improve the terms on which capital is available through its public investment programs. This is because if state loans reduce borrowing costs, private capital will flow out of state to earn higher returns elsewhere. The net effect will be to displace private capital with state capital in such markets.

In those capital markets where capital mobility is low, the situation is entirely different. In such markets the state can provide capital on improved terms by augmenting the supply without fear of displacing private lenders. Essentially, low mobility of capital in these situations means that the private capital market in Montana fails to recognize a variety of profitable investment opportunities and/or that it is isolated from the national capital market. It is in these situations that state investment programs can have the greatest effect.

Unfortunately, relatively little formal evidence is at hand which would permit state policy makers to clearly identify these opportunities for productive state investments. Nevertheless, there is abundant anecdotal evidence of worthwhile borrowers being unable to obtain loans, particularly if the borrower is a small business, lives in a rural area, or is a woman or member of a minority group. A systematic investigation of where capital market failures are occurring would help the state increase the effectiveness of its loan program. Current loan program rules are not principally designed to target loans in this sense.

C. Technology Levels:

A third important factor in Montana's economic growth is its level of technology. The level of technology has become a national and even global concern as evidence of its importance in economic growth has accumulated and as the United States' technological leadership has eroded in recent years. In Montana the belief that improved technology can promote economic growth has resulted in a proposal to create a Technology Alliance which would fund investments in new technology and disseminate technical information.

The role of the state in providing improved and less expensive access to technology is similar to its role in providing money capital. Where high mobility provides Montana firms with effective, competitive access to national technology markets, it is doubtful that the state can significantly reduce the cost of acquiring new products, processes, research and development services, technical consulting and other, similar forms of new technology. State efforts should, therefore, rather concentrate on those firms where such effective access is missing. Unfortunately, relatively little is known about which specific Montana firms and industries lack access to new technology.

The state must also play an important role in supporting scientific and technical research which is of great economic value to Montana but which will nevertheless not be produced in the private market. An example might be biological weed control. There is no question that finding an insect that would destroy Montana's noxious weeds would raise agricultural productivity and hence have substantial economic value. Private firms, however, are unlikely to find, test, develop, and market such an insect simply because once it has been released it will reproduce and spread across the state to do its job free of charge. It therefore becomes the responsibility of the government to provide technical innovations of this type. Again, relatively little is known about the potential for such research and its impact on Montana's economic development.

D. Business Climate:

There is a substantial belief, particularly among business people in Montana, that the state's development is heavily influenced by taxes, regulatory environment, unionization, and other factors affecting business climate. These factors are thought to operate in at least two ways. One is their impact on the competitive position of Montana producers in national or international markets. Thus, for example, Forest Service regulations are frequently seen as an important restriction on the development of the timber industry.

Second, business climate is believed to affect the judgment of firms considering locating in the state. It is a fact that business climate ratings are calculated, widely reported, and apparently used by business firms. Economic development authorities, including those in Montana, pay close attention to the results of these ratings.

As with other theories, there is little systematic evidence on the effect of business climate on economic development. Nationally, survey studies indicate that private market conditions rather than public policies are the predominant influences on business location decisions. Such studies, however, do not address the impact of business climate variables on the profitability and competitiveness of existing firms. Here, as in the case of other economic development theories, effective state action requires that more be known.

Most business climate theories stress the impact of taxes and regulations on the cost of doing business rather than their role in providing for environmental quality and public services. In Montana, however, it is typically recognized that the physical and social environment, educational system, and highway programs contribute to the state's economic welfare, not only because they enhance the quality of life but because they attract business activity. This feature of business climate theories means that many of the policy recommendations arising from them are politically, socially, and economically controversial. Montana's efforts to improve business climate have accordingly concentrated on such positive measures as business and capital assistance programs, product development, and a general philosophy of government outreach and cooperation with the private sector.

E. Conclusions:

The four hypotheses reviewed here are all influential in Montana. They all provide reasonable insights about the state's economic growth and the limits and possibilities of development policies. They also suggest a series of unanswered questions about the potential, scope, and form of development policies. As Montanans refine their efforts to strengthen their economy, answers to these questions will be essential.

CHAPTER II

OVERVIEW OF THE UNITED STATES ECONOMY

by

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Montana's economy is unique. It has been shaped by geography, sparse population, distance from major markets, dependence on natural resources, and other factors. In the long run, these features will continue to be the major determinants of Montana's economic future. In the short run, however, it is a different story. Factors such as geography and mineral deposits do not change from one year to the next and are not important determinants of short-run economic trends.

On the other hand, changes in the U.S. economy are one of the major determinants of short-run trends in Montana's economy. Consequently, it is important to review recent national economic events and projections for the next few years before analyzing the state's short-term economic future.

A. The U.S. Economy, 1979 to 1984:

The last five years have been a period of extremes for the U.S. economy. It began with two serious recessions and is now ending with an unprecedented burst of economic growth.

The recent trends in the U.S. economy may be illustrated using quarterly data for Gross National Product (GNP). Gross National Product is a measure of overall economic activity. It is the market value of goods and services produced in the U.S., before the deduction of depreciation charges and other allowances for business and institutional consumption of capital goods. In order to correct for inflation, GNP has been converted to constant 1983 dollars.

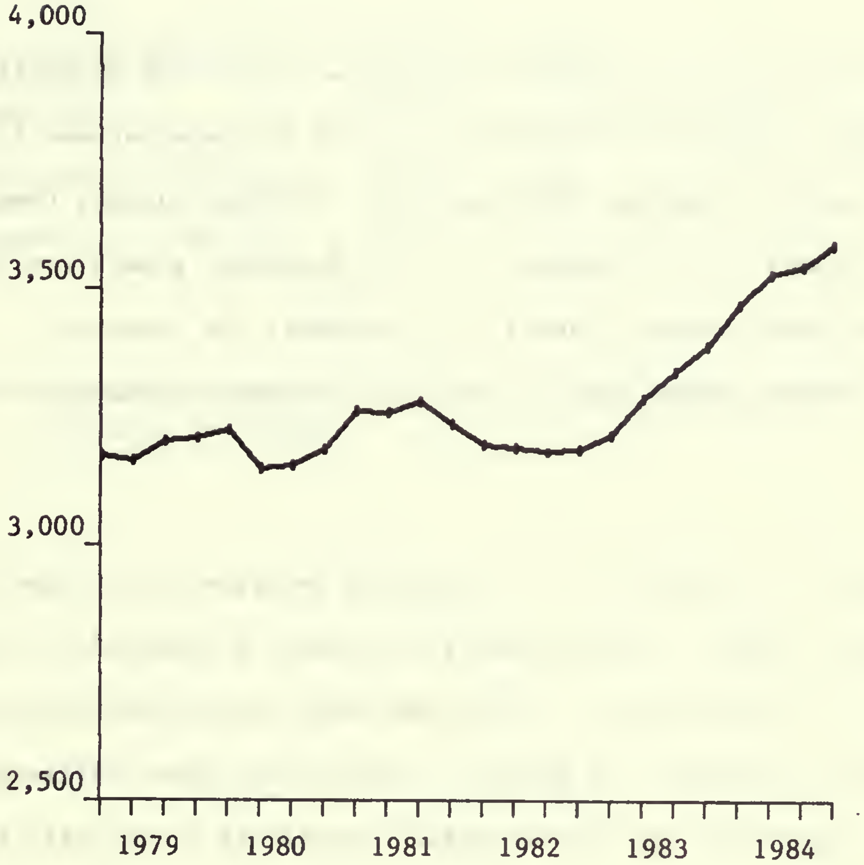
By late 1979, the U.S. economy began to slow (Figure 1), and there was a short and sharp contraction in real GNP (constant 1983 dollars) early in 1980. The ensuing economic recovery was also quick; the U.S. economy regained its pre-recession peak by the first quarter of 1981.

A second downturn (the famous "double-dipper") began late in 1981. It was much longer than the first recession. Real GNP continued downward for about a year. Finally, the U.S. economy reached the trough in the business cycle in the third quarter of 1982.

A strong and robust economic recovery started in the fourth quarter of 1982 and has continued until the present. Despite the severity of the recession, the U.S. economy quickly regained its pre-recession level; real Gross National Product had recovered by the second quarter of 1983, less than a year after the upturn began. During the recovery, the rate of economic growth approached record levels. Real GNP increased almost 7 percent during all of 1984, one of the highest annual figures since World War II.

FIGURE 1

U.S. GROSS NATIONAL PRODUCT
FIRST QUARTER 1979 - FOURTH QUARTER 1984
(BILLIONS OF 1983 DOLLARS)



SOURCE: U.S. DEPARTMENT OF COMMERCE, BUREAU OF ECONOMIC ANALYSIS, SURVEY OF CURRENT BUSINESS, JULY 1983 AND JULY 1984; U.S. DEPARTMENT OF COMMERCE NEWS RELEASE, "FOURTH QUARTER 1984 GROSS NATIONAL PRODUCT (REVISED)", FEBRUARY 21, 1985.

B. The U.S. Economy, 1985 to 1987:

The projections presented later for Montana's economy are based on forecasts for the U.S. economy prepared by Chase Econometrics, a national forecasting service. The state of Montana subscribes to the Chase Econometrics forecasting services. Most branches of Montana state government use the Chase forecasts.

The latest projections for the U.S. economy are presented in Table 1. Chase forecasts that real GNP in the U.S. will increase between 2.3 and 3.7 percent per year between 1985 and 1987. At first glance, these figures may seem very low compared to the 6.9 percent growth for 1984. The 1984 increase, however, cannot be maintained; the long-run sustainable annual growth rate for the U.S. economy is roughly 3.0 to 4.0 percent.

Chase projects that inflation will gradually increase in 1986 and 1987, after falling in 1985. The Consumer Price Index is expected to increase 3.6 percent in 1985, about 4.3 percent in 1986, and approximately 4.9 percent in 1987. Despite the general upward trend, these inflation rates are modest compared to the "double digit" figures of a few years ago.

Interest rates are expected to be stable in the 1985-1987 period. Short-term rates, as measured by the yield on 90-day treasury bills, will be stable at about 8.7 percent. The long-term mortgage rate also is projected to remain basically constant at a level of about 12.3 percent. In comparison, the 1984 rate for treasury bills was 9.6 percent and the mortgage rate 12.4 percent.

TABLE 1

ECONOMIC TRENDS FOR THE U.S. ECONOMY

	1983	1984	1985	1986	1987
Real GNP, percent change	3.7	6.9	3.7	2.3	3.6
Inflation (CPI), percent change	3.2	4.2	3.6	4.3	4.9
Interest rates, percent:					
90-day T-bills	8.7	9.6	8.7	8.7	8.8
Mortgage rate	12.7	12.4	12.2	12.4	12.3
Housing starts, millions	1.7	1.8	1.6	1.6	1.7
Unemployment rate, percent	9.5	7.5	7.1	7.3	6.5

SOURCE: Chase Econometrics Division of Interaction Data Corporation, (February 26, 1985).

Housing starts are an important indicator for Montana's wood products industry. Chase expects that housing starts will decline somewhat from the 1984 level of almost 1.8 million units. The number of housing starts is projected to decline to 1.6 million in 1985 and 1986, and to increase moderately to about 1.7 million starts in 1987.

Finally, Chase Econometrics anticipates a decline in the unemployment rate. After decreasing substantially from 9.6 percent to 7.5 percent in 1984, Chase expects the unemployment rate to decline further to about 7.1 percent in 1985, to increase slightly to about 7.3 percent in 1986, and to decline to 6.5 percent in 1987.

In summary, the Chase Econometrics forecasts for the U.S. economy are for moderate growth between 1985 and 1987, with 1986 being the lowest growth year. As compared to 1984, economic growth will be substantially less with inflation and interest rates generally about the same. The projections for 1985 and 1987 are consistent with the long-run potential for the U.S. economy, and are certainly better than the dismal years of the early 1980s.

CHAPTER III

OVERVIEW OF THE WESTERN CANADIAN ECONOMY

by

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A. Introduction:

The degree of economic interdependence between the U.S. and Canada is unmatched anywhere in the world. The two countries are by far one another's best customer, doing about $120 billion worth of cross-border trade in 1983. The relationship is asymmetrical, in that Canada is heavily dependent on business and economic policy decisions taken in the United States and the U.S. market absorbs nearly 70 percent of Canada's total exports. The bilateral relationship is also vital to the U.S. economy, since U.S.-Canada trade exceeds total U.S. trade with Japan and four of its largest European customers combined. Scores of transcontinental corporations maintain operations in both countries, and the recent auto workers strike in Canada, which almost overnight caused huge layoffs in the U.S. auto sector, revealed just how tightly the two economies are intertwined in key industries.

Montanans need to keep abreast of developments in the Western Canadian economy. In many areas, comparison between the state and each bordering province yields useful and instructive results, some positive (as in fresh trade opportunities), some not, as in the tremendous advantages British Columbia enjoys in the export of coal to Asian markets. In key sectors of the economy, such as agriculture, cooperation among border states and provinces is highly beneficial, and provides the added benefit of minimizing animosities in those cases where conflict is unavoidable.

B. Regional Profile:

The three westernmost provinces of Saskatchewan, Alberta, and British Columbia comprise an area of about 875 thousand square miles (equivalent to six Montanas) and a combined population of approximately 6.5 million (about eight times the population of Montana), or roughly one-quarter of Canada's total population of 25 million. As is true of the Canadian population as a whole, the majority of people in the western provinces live within 200 miles of the United States border and have business, tourism, or family ties with their U.S. neighbors. In many cases, western Canadians have stronger economic links and feel closer cultural kinship with the adjoining states than with the populous and politically dominant provinces of Ontario and Quebec in central Canada.

The western provinces provide Canada with most of its unprocessed food and fuel resources and a large proportion of its non-fuel mineral wealth as well. The southern Canadian prairies are an extension of the Great Plains and make up a significant portion of the North American "breadbasket". Saskatchewan and Alberta produce 80 percent of the country's grain and export, on the average, about 22 million tons of wheat and other grains each year. Alberta supplies about 85 percent of

Canada's oil and gas, and British Columbia's vast forests yield a variety of wood products exports worth approximately $12 billion each year. British Columbia is also an important coal and hard rock minerals producer; Alberta has a healthy livestock industry; Saskatchewan is the world's second-ranking supplier of potash and provides fully half of Canada's total uranium needs.

1. Alberta

Alberta is in transition from a period of rapid growth to one of more normal and sustainable growth. The successive oil price increases imposed by OPEC in the 1970s caused an unprecedented boom in the Alberta economy. Construction investment reached all-time high levels as energy "megaprojects" got underway and huge office buildings sprang up in Edmonton and Calgary. The flattening out of world oil prices left Alberta overbuilt and under considerable financial strain. The Alberta Heritage Trust Fund, which currently is funded by 15 percent of oil and gas revenues generated in the province, created an enormous financial nest egg during the boom years, and has been needed to help fund Alberta's general governmental services since 1983.

The oil and gas industry continues to be the most important job-producing sector. Alberta's unconventional oil plants built on the tarsands in the north-central part of the province are especially important now, since deep-well drilling has tapered off considerably. The Economic Council of Canada predicts a 30 percent decline in conventional oil production by the year 2000 as a result of slackening demand, soft world prices, and increased competition. Although natural gas production is expected to increase by as much as 60 percent in the same period, western Canadian firms are almost wholly reliant on exports to the U.S., where a glut in the market has kept prices low relative to Canada's regulated border price of $3.34 per thousand cubic feet of gas.

Three large petrochemical plants have been constructed in the province since 1974. These plants produce methanol, ethylene, and a number of associated products. Natural gas feedstocks for the plants are tied to the border price, however, and producers claim they will require as much as a 60 percent price cut in order to make their operations profitable. (Natural gas export prices have become more flexible and market-sensitive since the Progressive Conservative triumph in the September, 1984 federal election.)

Private and public sector economists agree that the province must steer itself away from too heavy a dependence on hydrocarbon resources. A more diversified economy based on a variety of interdependent sectors, including agriculture, coal, forest products, petrochemicals, food processing, and high technology is the aim of current policy in Alberta.

The international research firm, Batelle, has recently opened a large research facility in Edmonton. Edmonton is also the location for extensive cold-weather research activities that are immediately applicable to resource development projects in the Arctic. These are examples of high technology developed in the service sector.

The prospects for increased manufacturing in Alberta are not nearly so promising as the service sector. Geographic realities and competition from central Canada work against large-scale successes in manufacturing. On the other hand, demographic patterns and the continued shift of Canada's economic center of gravity westward provide many opportunities for people employed in banking, information processing, maintenance, management, and the personal services industries.

The agricultural sector is considered to be the major source of stability in the Alberta economy. Grain and livestock prices recently have been less volatile than energy prices and the maintenance of Alberta's farms and ranches does not require the enormous financial outlays necessary to bring capital-intensive oil operations on line. The recent acceptance of canola oil (a product from rapeseed) for human consumption by the U.S. Department of Agriculture was welcome news to Alberta rapeseed producers eager to establish a U.S. market. The provincial government's announcement of a Small Business and Farm Interest Shielding program in 1984 was also a boon. Nearly 20,000 farmers were granted relief from high financing costs.

Depending upon one's choice of economic projections, Alberta is either about to emerge from recession on a sound and stable footing or is poised to fall into a full-scale depression. The province is suffering from a 12 percent unemployment rate. Housing starts have fallen from 18,000 in 1983 to a mere 6,000 in 1984; home and farm foreclosures have risen dramatically, and banks are having to endure higher loan losses than elsewhere in Canada.

The Alberta government has responded to these problems in a number of positive ways. An Economic Resurgence Plan was initiated in 1982 to "smooth the transition" from high to low growth trends. The main purpose of the plan was to maintain consumer and investor confidence in Alberta's future. Elements of the plan include ongoing reductions in royalties charged to the oil and gas industry, interest shielding for new and struggling farmers, along with mortgage reductions. Public sector expenditures are being held to a 10 percent annual growth rate. The introduction of a controversial hospital user fee and a 5 percent personal income tax hike last year has been offset more recently by a reduction in provincial corporate taxes from 11 percent to 5 percent for manufacturing and processing firms. For small businesses earning less than $200,000 per year, the corporate tax has been eliminated altogether.

Provincial officials speak often of Alberta's intrinsic strength. Probably no other Canadian province is so well endowed with economic resources, nor can any other province boast an $11.7 billion savings account in the form of the Alberta Heritage Trust Fund.

In the 1982-83 fiscal year, the provincial government was confronted with an unprecedented $2 billion deficit. In contrast, the 1983-84 deficit is forecast at $566 million, thanks to the injection of Heritage Fund money. By the end of 1984-85, nearly $4 billion in

Heritage Fund investment income will have been diverted to provide special support for Albertans. This fiscal year the investment income from the Fund will provide approximately 16 percent of all budgetary revenue for the province. In concrete terms, for two months out of twelve the Heritage Fund provides the money to operate Alberta's schools, hospitals, seniors' programs, colleges, the justice system, and other services.

It is widely recognized that this reliance on past resource revenue savings cannot last very long. The Alberta government released a white paper on industrial and science policy in 1983 which revealed an ambitious (and politically uncharacteristic) plan for increased intervention in the provincial economy. The plan includes more tax incentives, public investments in major energy projects, local procurement policies, and export assistance. Public responses to date show that the proposals to expedite export sales and to create an Innovation Center in conjunction with the already-established Alberta Research Council stand in good favor, but there is widespread skepticism about the rest of the plan. Albertans are still more wary than most Canadians about its government's involvement in the provincial economy.

2. British Columbia

Of the 10 Canadian provinces, British Columbia (B.C.) ranks third in both area and population. This coastal province is heavily dependent on international trade: over 55 percent of total production is exported, mostly to the United States, Japan, and

Western Europe. Mining and forestry are the mainstays of the B.C. economy. This province has large deposits of copper, molybdenum, lead, zinc, silver, and gold. Because of stiff competition from foreign producers and slackening world prices for most mineral commodities, many B.C. mines have had to close in the last two years. Coal development is the sole bright spot. The province has an estimated 5.2 billion tons of coal reserves, almost half of which could be extracted through conventional open pit mining processes. Most of the coal currently being developed is destined for steel mills in Japan and Korea.

British Columbia inaugurated a major frontier coal development project in June, 1984. The $2.7 billion Northeast Coal Development Project at Tumbler Ridge is expected to produce 8 million tons of coal annually. The Tumbler Ridge project is located in the remote northeastern part of the province. The infrastructure needed for the project was built from scratch in a harsh environment. Coal must be shipped about 600 miles to the coal port of Prince Rupert. The project's rapid completion and initial success can be partly attributed to the role of the B.C. and Canadian federal governments in expediting permit review and providing massive subsidies for the construction of roads, bridges, rail lines, tunnels, electrical transmission lines, port facilities, and even a brand-new townsite in the middle of the wilderness.

British Columbia has historically supplied about 17 percent of Japan's steel industry coal demand. With the Northeast Coal area under production, this share is expected to increase to 25 percent. In contrast, the U.S. market share has shrunk to 18 percent from 35 percent. Canada's strength in coal exports is attributed to reliability of supply and the securing of long-term contracts. Some doubt, however, has been cast on the Tumbler Ridge project because of Japanese firms' desire to renegotiate three-year-old contracts in view of the availability of much cheaper coal from Australia and China.

There is increasing anxiety in British Columbia about the future of the forest products industry. Virgin timber stands are rapidly disappearing. The growth cycle is slow compared to the southern United States, where B.C.'s most formidable competitors are thriving. Price trends for wood products are unpredictable. U.S. attitudes are crucial to the industry's health, since lumber exports are triggered by housing starts in the United States and many U.S. firms are still intent on restricting Canadian imports. (A previous restrictive effort failed after a U.S. International Trade Commission conducted an investigation of charges that Canadian companies have an unfair advantage over their U.S. counterparts because of subsidized stumpage fees.)

The importance of the forest industry to British Columbia cannot be overemphasized. The industry is the largest single contributor to the provincial economy, producing between 50 and 60 percent of all foreign exports; it employs directly over 10 percent of the labor force and supports another 15 percent in the services and manufacturing sectors.

British Columbia has about 200,000 square miles of forest land representing 56 percent of the province's total land area and approximately 1.4 trillion board feet (Scribner) of merchantable timber. This constitutes over half of Canada's mature softwood resources and one-quarter of North America's standing timber resources. British Columbia currently manufactures approximately 85 percent of the plywood produced in Canada, 65 percent of the softwood lumber, 30 percent of the pulp, and 15 percent of the paper. About 60 percent of B.C. lumber, 90 percent of its newsprint, and all of its pulp is exported to the U.S., Japan, and Western Europe. Almost 95 percent of British Columbia's forest land is owned and administered by the provincial government. Forest management is guided by the principle of sustained yield.

Manufacturing in British Columbia is mainly resource-oriented. Wood products remain the largest manufacturing group in the province, although the industry has not matched the growth rates of other types of manufacturing activity such as metal fabricating and electrical products. The B.C. government is actively seeking high technology investment in the Vancouver area. Several integrated research and development centers known as Discovery Parks are being established near the province's leading universities.

Substantial inflows of financial capital from Pacific Rim countries are anticipated over the next decade. Many Hong Kong investors, leery of China's scheduled takeover in 1997, will likely seek a safer haven for their assets in North America. Honda Corporation recently decided to locate a large auto parts facility near Vancouver, and several other large Japanese companies are interested in purchasing large volumes of liquid natural gas from the province.

3. Saskatchewan

Historically Saskatchewan has been the least diversified of all the western provinces. Wheat was for a century the only major export commodity; when prices fell or drought occurred, the provincial economy all but collapsed. Today Saskatchewan is Canada's number two oil producer and has a small but thriving manufacturing sector. The province supplies 25 percent of the world's potash consumption and exports uranium to France and Japan. The Interprovincial Steel Corporation (IPSCO), headquartered in Regina, operates western Canada's largest steel mill and exports plate, strip, and sheet steel as well as pipe and castings to the United States (including Montana).

Agriculture still plays a key role in Saskatchewan's economy, accounting for about one-quarter of the labor force. Approximately 48 million acres are under cultivation in Saskatchewan, producing 50 percent of Canada's six major export crops: wheat, oats, barley, rye, flaxseed, and canola seed. Other important Saskatchewan crops include alfalfa, peas, beans, lentils, buckwheat, and sunflowers.

Livestock accounts for about 20 percent of all farm receipts. Much of Saskatchewan's beef and pork production is exported. Canada's foremost international livestock show, the Canadian Western Agribition, is held each year in Regina. Food processing is the largest manufacturing industry in the province, and dryland farm equipment is another major export industry.

Saskatchewan is currently facing a major crisis in its agricultural sector. The situation is familiar to many Montana farmers: low commodity prices, high interest rates, deep indebtedness and, worst of all, severe drought.

Despite its interior location, Saskatchewan is very active in international trade. One job in five is directly trade-related, and about half of the total domestic product is exported out of Canada. Saskatchewan enjoys good access to U.S. markets, particularly the upper midwest, and maintains vigorous overseas sales in such distant markets as China, Australia, Japan, and Brazil. Among the most promising export items are satellite tracking systems, data switching apparatus, and sophisticated electronic instruments, some of which are used in monitoring agricultural processes and in mine safety equipment.

A Progressive Conservative government gained power in Saskatchewan in 1982. The first act of pro-business premier Grant Devine was to eliminate the provincial gasoline tax. This was followed closely by the introduction of an oil industry recovery program that included a one-year tax holiday for some types of oil and gas development. The government committed itself to deregulating industry, "privatizing" some of Saskatchewan's crown (government-owned) corporations, and reviewing industry-labor relations. A new Department of Economic Development and International Trade was created. The province tried to escape the nationwide recession but could not, and suffered two consecutive record deficits totaling more than $537 million.

Saskatchewan's long history of unstable incomes is gradually giving way, however, to greater security gained from manufacturing and high technology development. A new heavy oil project at Lloydminster will give a boost to the construction industry and will spill over into service industries. Still, 40 percent of Saskatchewan's total exports are represented by grain sales, so the short-term future is more dependent on favorable weather and high international grain prices than increases in business activity within the province.

Saskatchewan has attracted significant interest and investment in high technology. Saskatoon is home to Canada's largest fiber optics manufacturing facility, owned by Northern Telecom. The plant employs over 800 people and has close to 90 percent of the market share in Canada. One-third of all optic fiber used in the U.S. also comes from Saskatchewan. Saskatoon has a growing technology park called Innovation Place (sometimes referred to as "silicon flats") which provides fruitful opportunities for both public and private sector research and development agencies to conduct joint programs and share valuable information.

B. Montana's Economic Relationship with Western Canada:

In some ways Montana resembles a composite miniature of the three bordering provinces. An inverted triangle overlaid on the transborder region would reveal that the state's west-to-east pattern of economic geography is mirrored in larger dimensions north of the 49th Parallel in Canada. British Columbia's huge forest reserves are an extension of the mountain greenery in northwestern Montana. The high plains east of the continental divide in Montana are met by a similar landscape in Alberta and Saskatchewan. These same provinces have oil and gas and coal resources similar to those found in Montana, but in much larger quantities in the case of crude oil and natural gas. The economic consequences of these geographic and geologic continuities are diverse: they present challenges, opportunities, and sometimes conflict. Some examples are as follows:

- B.C.'s forest products exports to the U.S. compete with Montana's timber industry.
- Grain exports from the western prairies in Canada are sold in the same markets as Montana's wheat and barley.
- Farm implements and meat products are traded both ways across the border, yielding advantages to consumers and localities situated near the 49th Parallel.
- Policy changes in the energy sector can send scores of Canadian oil and gas drilling rigs southward, displacing domestic workers; however, direct investment by Canadian mining firms in Montana creates hundreds of jobs as well.
- Resource development can impinge on neighboring economies and environments. Water shortages caused by drought and increasing

demand for irrigation are straining water supplies in some already over-extended river basins near the Alberta-Montana boundary. Power plants in southern Saskatchewan have aroused public concern for the maintenance of water and air quality in the northeast corner of the state, while a proposed coal mine development (Cabin Creek) in southeastern British Columbia poses a threat to the pristine (and hence economically important) area near and within Glacier National Park.

Montana's economic relationship with its Canadian neighbors thus has both competitive and complementary aspects.

Business and commercial ties are also an important part of the broader economic relationship. The balance of trade between Montana and the neighboring provinces is lopsided in favor of Canada. The value of Montana exports to Canada was about $145 million in 1983; imports from Canada were worth about $867 million (the bulk of the exports and imports were with the western provinces). Most of this trade consists of like commodities: Montanans sell cattle, meat, lumber, drilling machinery, and fertilizer to the Canadians; they sell these same kinds of things to Montana. Crude oil and natural gas, however, are the largest commodity imports. The Montana Power Company has imported natural gas from its Alberta-based subsidiary for many years. Some fruits and vegetables also travel both ways across the border. In addition, the state imports telephone switching equipment and building materials from Canada.

Much of the state's "deficit" in trade can be attributed to the oil and gas imports, the exchange rate differential (which makes Montana products uncompetitive in Canadian markets), and the relatively activist role provincial governments play in export assistance and trade development activities. The imbalance in trade is somewhat offset by Canadian direct investment in Montana, which generates jobs and income in the mining, tourism, real estate, and service sectors.

Montana shares with its provincial neighbors economic goals and resources which have both negative and positive implications for cross-border trade. A common resource base means western Canada has little need for Montana's raw products. Similar diversification plans in western Canada means tougher competition for Montana exporters seeking sales in Canadian or other foreign markets where the provincial governments have already established strong trade and cultural links, such as in the Orient and Europe. The implant of science and technology centers, coal and climatic research facilities, and numerous meat and grain processing firms in the Canadian region well in advance of similar developments in Montana could make it difficult for the state to attract investment capital in the same sectors.

On the positive side, however, there are a number of complementarities which present fresh potential market opportunities for Montana. Tourism is an area where cooperative relations should pay handsome dividends for the state and the provinces alike. Beginning in 1985 with Saskatchewan's commemoration of the Riel Rebellion, each of the three bordering provinces and a number of U.S. states in the region will be engaging in territorial celebrations. Montana's own centennial year (1989) follows a major international exposition in Vancouver, British Columbia in 1986 and the Winter Olympics in Calgary in 1988.

The emphasis on more extensive processing of agricultural commodities and applied research toward upgrading the quality of existing natural resources in both western Canada and Montana suggests the following areas in which Montana firms could find a niche for their products and services in the bordering provinces:

-- water quality, treatment, and storage methods and machinery
-- pollution abatement techniques (e.g., in cases of groundwater contamination)
-- oil and gas exploration equipment
-- plant genetics; biotechnology
-- mine safety and land reclamation
-- computer applications to farm/ranch agriculture
-- waste and by-products recycling
-- passive solar, wind, and other alternative energy systems
-- medical technology
-- specialized food products

Demographic patterns are also suggestive of profitable trade outlets for Montana manufacturers. Western Canada has a number of medium to large cities which play a preeminent role in shaping the regional economy. The greater Vancouver and Victoria areas in British Columbia contain three-quarters of the total provincial population; Vancouver alone has 1.2 million residents and is by far the largest city in the Canadian West. Edmonton and Calgary, Alberta rival one another in size and economic importance. Edmonton, the provincial capital and, increasingly, the supply center for oil and gas development in the far North, has about 560,000 people. Calgary, which has benefited from the westward shift of much of Canada's financial and commercial activity, has a total population of 621,000. Regina and Saskatoon are the two largest metropolitan areas in Saskatchewan. Regina is the provincial capital and headquarters for most of the province's agricultural and resource-based industries. Saskatoon is gaining worldwide recognition as a burgeoning center for high technology enterprises. Estevan, Saskatchewan; Lethbridge and Medicine Hat, Alberta; and Kelowna, B.C. are all important smaller agricultural centers in close proximity to Montana and adjoining border states.

C. Recent Trends and Short-Term Outlook:

The short-term outlook for Canada's western provinces is muddied by external factors such as U.S. interest rates, world price levels, the weather. Each of the three provinces is striving to reduce dependence on natural resources and is trying to achieve a more balanced economy based on a sustainable mix of agriculture, mining, manufacturing, and services.

The Conference Board of Canada is forecasting poorer economic performance for the region in 1985. Nationally, the Board projects unemployment to stay at about 12 percent. In Alberta it is expected to rise to 12.7 percent, and in B.C. to over 16 percent. Real growth is estimated at less than one percent in both provinces. Saskatchewan is expected to enjoy the fastest increase in output at a mere 1.6 percent. Less than a year ago, other forecasting agencies such as the Organization for

Economic Cooperation and Development were predicting 4 to 5 percent growth for Canada in 1985; the Conference Board figures, released last August, show a net loss of .2 percent in 1985 real domestic product. There is not much argument in Canada today that 1985 looks dismal, especially in the West.

The Economic Council of Canada has urged in its latest report entitled Western Transition that the appropriate goal for the region should be DEPENDABLE growth rather than rapid growth. The Council also emphasizes the importance of the service sector over manufacturing as the near-term source of job creation.

Economic diversification is a theme common to all of the western provinces. The drive toward less reliance on raw materials extraction and export is both the result of foreseeable resource depletion and a reflection of western Canada's historical argument with provinces further east. The West has long been at odds with central Canada over the structure of trade within the country as well as between Canada and the rest of the world, the United States in particular. The center/periphery relationship which grew out of the national development policies and western settlement patterns controlled by the Canadian federal government has had negative economic consequences for the West. Tariff barriers, for example, designed to protect the industries of Ontario and Quebec from U.S. and other foreign competitors, cause western consumers to pay inflated prices for imports and domestically-produced manufactured goods while their own natural resource export industries suffer retaliatory measures from abroad.

Tariff reductions, an easing of restrictions on natural gas exports to the U.S., changes in the federal tax structure, and a reduction of interprovincial trade barriers have all been promised by the new Progressive Conservative government in Ottawa. Prime Minister Brian Mulroney has acknowledged the importance of close consultation between the central government and the provinces by pledging to convene a series of meetings involving himself and all the provincial premiers to discuss economic issues. The federal government is also committed to revamping the price-distorting rail transportation subsidy system and may pursue free trade agreements with the United States.

All of these measures should add to the western provinces' overall economic strength by helping to boost exports and promote diversification. Since international trade is a key factor in the region's economic performance, and the U.S. is by far western Canada's most important customer, bilateral discussions about a possible free trade arrangement are being monitored with keen interest in the capitals of the western provinces. Likewise, each of the provinces is committed to stimulating foreign investment within its borders and boosting research and development activities which in turn will generate high-skill jobs and high technology exports.

CHAPTER IV

OVERVIEW OF THE MONTANA ECONOMY*

by

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This section analyzes recent economic trends in Montana and presents forecasts for the next few years. The Montana economy cannot be analyzed in the same way as the U.S. economy because many of the national economic indicators are not available for states or other small economies.

Recent trends in Montana's economy may be analyzed using nonfarm labor income. It consists of the wages and salaries, net income of the nonfarm self-employed, and certain fringe benefits of all working people, except those working on farms and ranches. Nonfarm labor income measures payments to workers; for most areas there is a high correlation between changes in economic activity and changes in the amount of labor required. In other words, changes in nonfarm labor income provide an approximate equivalent for changes in GNP.

Quarterly data for nonfarm labor income, expressed in constant 1983 dollars, for Montana and the United States are presented in Figure 2. Figure 2 does

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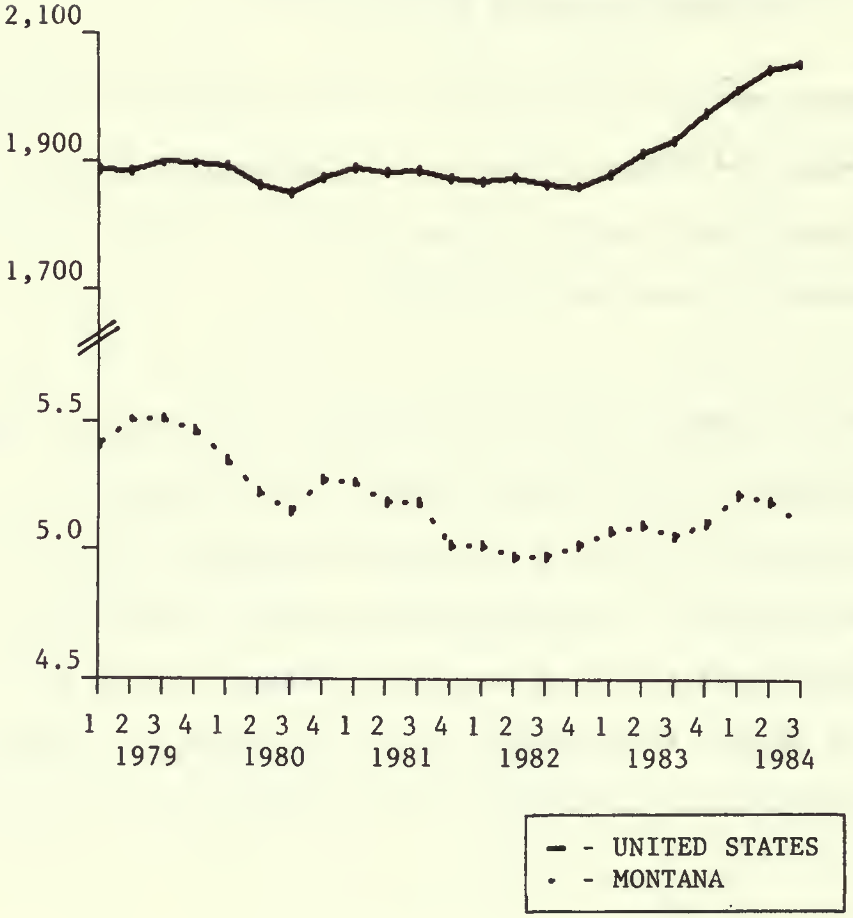
* This chapter is based in part on an earlier paper by Paul Polzin, Director of Forecasting, Bureau of Business and Economic Research, University of Montana.

FIGURE 2

NONFARM LABOR INCOME, MONTANA & THE UNITED STATES
FIRST QUARTER 1979 - THIRD QUARTER 1984
(BILLIONS OF 1983 DOLLARS)



SOURCE: U.S. DEPARTMENT OF COMMERCE, BUREAU OF ECONOMIC ANALYSIS, REGIONAL ECONOMIC INFORMATION SYSTEM: THE IMPLICIT PRICE DEFLATOR FOR PERSONAL CONSUMPTION EXPENDITURES WAS USED TO CONVERT THE DATA TO CONSTANT 1983 DOLLARS.

not include farm income since it fluctuates widely from quarter to quarter because of the irregularity of marketing and government payments. The data begin with the first quarter of 1979 and end with the third quarter of 1984, the latest figures available for both Montana and the U.S. The recent recession is clearly shown in the data. The peak in economic activity occurred late in 1979; the graphs for both Montana and the United States turn sharply downward after the fourth quarter of 1979. The trough in the business cycle in Montana appears to have occurred in the second quarter of 1982. Interestingly, the upturn in economic activity in Montana, as measured by nonfarm labor income, actually predated the national recovery; U.S. nonfarm labor income reached a trough in the fourth quarter of 1982.

The data in Figure 2 also show the weakness of the economic recovery in Montana as compared with the United States. The economic upturn for the U.S. has been strong, particularly in 1984. Montana's recovery has been very sluggish, partly due to declines in agricultural, heavy construction, and railroad labor income for both 1983 and 1984; a decline in mining income in 1983 and no growth in 1984; very slow growth in the manufacturing income component for 1984; and no growth in the 1984 federal government labor income component.

A. Montana's Economy, 1979 to 1982:

As was discussed in Chapter II, the United States technically experienced two recessions in recent years; one beginning in late 1979 lasting for two or three quarters, and another starting in the middle of 1981 and continuing until late 1982. Combined, it was the longest recession in the postwar period. The 1974-75 recession, in contrast, was about six quarters.

The data in Figure 2 suggest that Montana experienced a similar trend. There was a slight upturn in nonfarm labor income late in 1980. But, this increase was relatively small, and nonfarm labor income did not return to its prerecession level. Therefore, it follows that the recent recession in Montana began in the fourth quarter of 1979 and continued until the second quarter of 1982 -- a period of ten quarters (2½ years).

Montana's recession was not only long but also severe. From the cyclic peak in the fourth quarter of 1979 to the trough in the second quarter of 1982, nonfarm labor income in Montana declined 8 percent. The corresponding figure for the United States economy was a decline of 2 percent. In other words, the recent recession in Montana was four times more severe than in the United States.

This was not a typical recession since in the past, economic downturns in Montana have usually been less severe than in the United States. During the 1974-75 recession, for example, nonfarm labor income in Montana experienced only a deceleration in its growth rate, while it declined significantly in the nation. Montana's economy is usually less cyclical because of the importance of agriculture -- which has its own ups and downs which usually do not coincide with the national business cycle.

1. Reasons for the Severity of the Recession

Montana's relatively poor economic performance was primarily due to unique features of the recent recession. They were:

- Poor profitability in agriculture.
- Extremely high interest rates.
- Permanent closures in Montana's important industries.

a. Agricultural Income

During "normal" periods, farms and ranches account for about one-third of Montana's economic base as measured by labor income. They often cushion the impact of the national business cycle on the state's economy. Since the fourth quarter of 1979, net farm income (after accounting for inflation) has been consistently less, often much less, than one-half the corresponding figures for the 1974-75 recession. In other words the recent recession unfortunately coincided with a period of poor profitability in agriculture.

b. High Interest Rates

The recession was characterized by extremely high interest rates, which adversely affected many of Montana's important industries. The wood products industry, for example, one of the major components of the state's economic base, was particularly hard hit. Employment declined by about one-third between 1979 and 1982. High interest rates also adversely affected the agricultural sector by reducing profits.

c. Permanent Job Losses

There have been a number of permanent closures and shutdowns in Montana's important industries. Specifically, since 1979 the Montana economy has been jolted by the following events:

-- The shutdown of a transcontinental railroad (The Milwaukee Road).

-- The closure of large primary metal refineries in Anaconda and Great Falls.

-- Decreased employment and finally cessation of all mining by The Anaconda Company in the Butte area (1983).

-- The loss of a large sawmill and plywood plant in Missoula.

-- Reduced railroad employment due to reorganizations and improved efficiency.

-- Decreased federal civilian and military employment due to reorganizations and other cutbacks.

Taken together, these events have resulted in the permanent loss of about 8,000 jobs and have adversely affected Montana's economic base.

In summary, the recent recession in Montana was unusually long and severe. This situation was caused by low agricultural incomes, high interest rates, and permanent job losses in basic industries. The permanent closures and shutdowns are particularly important because they represent a reduction in Montana's base that will not be regained as the economy recovers from the recession.

B. Montana's Economy, 1983 to 1987:

This section brings the analysis of Montana's economy up-to-date by examining recent trends and presents forecasts to 1987. In addition to nonfarm labor income, three additional local economic indicators will be examined: personal income, nonfarm wage and salary employment, and the unemployment rate. Each of these indicators will be explained later. It is important, however, to keep in mind that each measures a different aspect of the economy. Because of this, indicators may not have identical trends during certain periods. Taken together, however, the four general economic indicators provide a good overview of Montana's economy.

1. Nonfarm Labor Income

Montana and the U.S. both began their recovery late in 1982. Since then, however, Montana has lagged behind the rest of the nation. During 1983, the first full year of the recovery, nonfarm labor income (adjusted for inflation) in Montana increased only 1.7 percent, as compared to 3.1 percent nationwide.

The sluggishness in the recovery for Montana continued into 1984. Manufacturing income increased only modestly over 1983 levels, partly due to capacity constraints for wood products manufacturing and a decline in the food processing sector (Chapter VII). No growth was experienced in the mining and federal government sectors (Chapters VI and IX). To make matters worse, the agricultural sector had a disastrous year (Chapter V). Preliminary information for 1984, however, indicates that service industry income increased about 5 percent (adjusted for inflation). Overall, Montana nonfarm labor income increased about 3 percent in 1984 compared to approximately 6 percent for the U.S.

After 1984, projections from the Montana Economic Reporting and Forecasting System show continued moderate growth in Montana. Nonfarm labor income in constant 1983 dollars is expected to rise 2 to 3 percent per year through 1987.

Despite the forecasts for continued economic growth, all is not rosy for the Montana economy. The U.S. economy was able to quickly regain its prerecession levels. In Montana, however, it will take more than five years to fully recover from the recessions of the early 1980s; nonfarm labor income will not exceed its 1979 value until 1985 or 1986.

2. Total Personal Income

A second general economic indicator is total personal income. Personal income is the income received by Montanans from all sources. It includes labor income (farm and nonfarm), transfer payments, and dividends, interest, and rent. Personal income does not include personal contributions for Social Security and has been adjusted for persons who work in one state but live in another. Personal income measures the ability of Montanans to purchase clothing, food, and other consumer items.

Total personal income for Montanans actually declined only one year (1982) during the recession. For the most part, the sharp declines in labor income described above were offset by growth in rent, dividends, and interest; and in transfer payments, especially Social Security benefits. That helped maintain purchasing power during the recession.

Personal income only increased about 1 or 2 percent in 1983 and 1984, after inflation. This is thus another indication of the slowness of the Montana economy in recovering from the recent recession.

For the period of 1985 to 1987, personal income is projected to increase each year about 3 percent (inflation adjusted).

3. Nonfarm Wage and Salary Employment

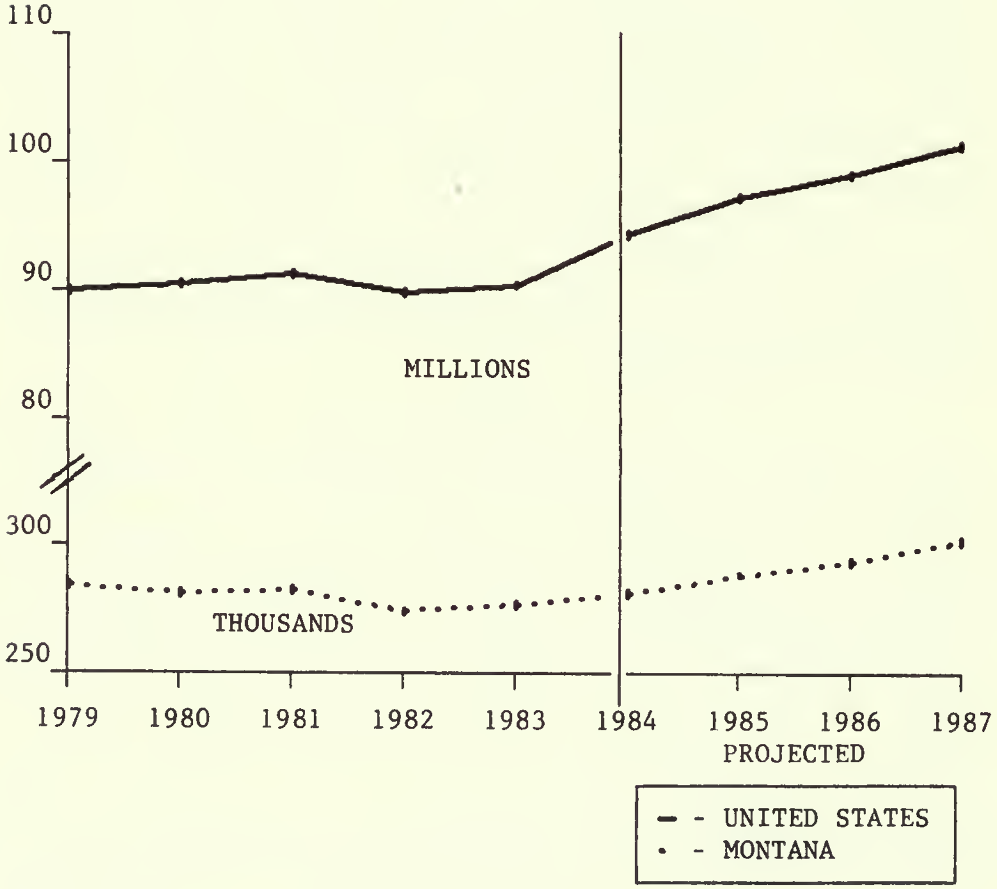
The third general economic indicator is nonfarm wage and salary employment. Nonfarm wage and salary employment includes all jobs in Montana except those in agriculture and the self-employed (which includes farm and ranch proprietors). Even though some workers are not counted, nonfarm wage and salary employment provides a useful indicator of short-run changes in the overall job market and job opportunities in Montana.

Nonfarm wage and salary employment increased 1.8 percent in 1984 (Figure 3). This translated into about 5,000 new nonfarm wage and salary jobs for Montanans. Despite this increase, nonfarm wage and salary employment in 1984 is still below the pre-recession peak of 1979.

The forecasts from the Montana Economic Reporting and Forecasting System are for continued moderate employment growth after 1984. An addition 6,000 to 8,000 new jobs are projected to be created each year between 1985 and 1987.

FIGURE 3

NONFARM WAGE & SALARY EMPLOYMENT
MONTANA & THE U.S.
1979 - 1987



SOURCES: MONTANA DEPARTMENT OF LABOR AND INDUSTRY, RESEARCH AND ANALYSIS BUREAU; UNIVERSITY OF MONTANA, BUREAU OF BUSINESS AND ECONOMIC RESEARCH, MONTANA ECONOMIC REPORTING AND FORECASTING SYSTEM (MARCH 1984); AND CHASE ECONOMETRICS DIVISION OF INTERACTION DATA CORPORATION.

4. Unemployment Rate

The final general economic indicator is the unemployment rate. The unemployment rate measures the percentage of the civilian labor force that is currently unemployed. It includes those persons looking for and available to take a job, or waiting to be called back to a job from which they have been laid off. The unemployment rate does not include "discouraged workers," those persons who are no longer looking for work because they couldn't find a job.

The unemployment rate is a very popular economic indicator; the latest figures are prominently reported on television and in newspapers. But the unemployment rate is an indicator which is very difficult to properly interpret. For example, it tends to be a lagging economic indicator, declining well after a recession begins and rising after other indicators signal an improvement in the economy.

Unemployment rates for Montana and the United States are shown in Figure 4. This graph clearly indicates that unemployment is a lagging indicator. Notice that the highest unemployment was recorded in 1983, when the other indicators were already showing signs of a recovery.

Montana's unemployment rate decreased from 8.8 percent in 1983 to 7.4 percent in 1984. From 1985 to 1987, it is projected to decrease moderately further to about 7 percent by 1987, but to be above the U.S. unemployment rate during this period.

DeSmet raised wheat and potatoes, and by 1845, Father Ravalli had built the first flour mill in Montana. The principal purpose of these activities was to feed the people at St. Mary's.

Some cattle were wintered in the Ruby and Deer Lodge valleys in the late 1850s. By 1868, there were about 82,000 cows and calves in Montana and by 1872, the number had increased to over 182,000. With the discovery of gold in 1862, miners provided a local market for beef and other agricultural products. Most food stuff had been delivered to the mining areas either from Fort Benton or from Utah.

The first farmers in the Gallatin Valley settled near Three Forks in 1863 raising wheat, oats, barley, and potatoes, most of which were sold to the gold miners to the west. By 1864, farms were staked out near Bozeman. That year, W.W. Alderson of the Gallatin Valley produced 340 bushels of wheat which he sold for $10/bushel and 600 bushels of potatoes which he sold for 12¢/pound. In 1865, a reaper and a small thresher were brought up the Missouri River to Fort Benton, and then overland to the Gallatin Valley and mechanized agriculture in Montana had begun. That same year, the first flour mill in the Gallatin Valley was built. Irrigation was used as early as 1864. Wheat was a very productive crop and by 1867, two additional flour mills were in operation in the Gallatin Valley.

High food prices during the gold rush days meant the most successful farmers and ranchers earned higher incomes than the majority of miners. Then as now, outside events were to have a dramatic impact on the farmers and ranchers of Montana. W.W. Alderson received $10 a bushel for wheat in 1864 because of isolation of the gold camp market from the outside world. That captive market was lost when the Utah Northern Railroad reached the Montana border in 1879 and Butte on December 21, 1881. By the time the Northern Pacific Railroad reached Montana a few years later, Montana's agriculture had begun its integration into the national market for agricultural products.

2. The 1920s and 1930s

In 1919, 33 percent of the cash receipts of U.S. farmers came from foreign export sales. By 1940, export sales had declined to only 6 percent of U.S. agricultural cash receipts. The collapse of the international trade of agricultural products nearly meant the demise of U.S. agriculture. By 1933, the average income of U.S. farm families was only 16 percent of the average income for nonfarm families. The two decades of the 1920s and 1930s were a period of economic and human tragedy for U.S. agriculture. Then, as now, Montana farmers and ranchers were not spared. Then, as now, they were caught up by and dominated by forces they could not control and often did not fully understand. It was against this background that the need for and the character of federal farm programs developed.

3. The 1970s and 1980s

The greatest change to U.S. agriculture that took place during the 1970s was the re-establishment of its international trade component. Worldwide, there were and still are severe restrictions on the trade of livestock products, so there was little direct impact of this internationalization on U.S. livestock producers. However, there was a direct and dramatic influence on the grain producers of the United States and Montana.

One of the major reasons for this change was the decision in 1973 to officially abandon the fixed foreign exchange rates for the U.S. dollar which were established in the Bretton Woods Agreement of 1945. The Bretton Woods Agreement was key in a series of steps taken to assure that the collapse of international trade which occurred after World War I would not repeat. Until the mid 1960s these series of agreements did their job well, but by 1970, the U.S. dollar was overpriced in the world market and U.S. exports -- including U.S. agricultural exports -- could not compete effectively in that world market.

As a result of moving to a system of floating exchange rates, the value of the dollar dropped rapidly, and U.S. exports -- including U.S. agricultural exports -- began to expand. Prosperity became a word which could be used once again to describe U.S. agriculture -- including the grain industry in Montana. The Russian grain deal and an expanding world economy helped, but without the devaluation of the U.S. dollar, the outcome would have been different for U.S. agriculture. Between 1976 and 1979, there was a further decrease in the value of the dollar. This contributed to the growth of U.S. agricultural exports.

By 1980, things had begun to change. In order to bring inflation under control, the Federal Reserve Board implemented a tight monetary policy. While inflation was brought under control, expanded federal expenditures, changes in tax laws, and an economic recession resulted in record high federal budget deficits. Real interest rates (actual interest rates minus the inflation rate) increased from historic levels of 2 to 3 percent to between 7 and 8 percent, primarily because of heavy government borrowing bumping up against a tight money supply.

With high real interest rates and relative political stability, the U.S. became a preferred place for foreign investors to place their surplus funds in the 1980s. However, in order to invest in the U.S., foreign currencies had to be converted into U.S. dollars. Despite growing U.S. merchandise trade deficits, there was a growing demand for U.S. dollars and the foreign exchange value of the U.S. dollar increased about 45 percent between 1980 and 1984.

High U.S. dollar exchange rates make U.S. exports expensive in terms of the domestic currency of foreign buyers. This factor along with an international credit crisis, increasing restrictions on international trade, and increased competition have hurt U.S. agricultural exports. There were other factors such as the grain embargo against the U.S.S.R., but the high foreign exchange value of the U.S. dollar has cost the grain producers of Montana dearly. As long as the current level of exchange rates for the U.S. dollar prevail, prosperity will not be a descriptive term for Montana's grain industry.

During this same period, decreasing consumer incomes associated with the recession caused a decrease in the demand for beef. This compounded a rising consumer worry about an association between beef and blood cholesterol levels. While there is not sound scientific evidence that diet alone can have a significant impact on blood cholesterol levels, consumer preference for beef is apparently changing and the per capita consumption of beef in 1983 was only 83 percent of the 1976 level. Unless there are programs which change consumers' ideas about beef, the chances are that per capita consumption of beef will continue to decrease slowly from the current 78.5 pounds (retail weight) per capita.

Contributing to the decline in the demand for beef is the fact that the poultry industry has done very well in promoting their product. Total poultry meat consumption has increased about 25 percent since 1976. In the last four years, per capita broiler consumption alone has increased by 10 percent and now equals 51.6 pounds (retail weight) per capita.

As in the case of grain, Montana beef producers must be able to meet the competition. For grain, the competitors are foreign producers. In the case of beef, it appears the competition is from poultry and fish.

B. Description of Montana Agriculture: (1)

Of Montana's 93,176,320 acres, two-thirds or 61,100,000 acres are in farms and ranches. As indicated in Figure 5, most of this land is pasture and rangeland.

Cattle/calves along with wheat and barley are Montana's principal agricultural products. Others include dairy products, sugar beets, hay, hogs, and sheep and wool.(2) Table 2 summarizes production for the major products since 1960.

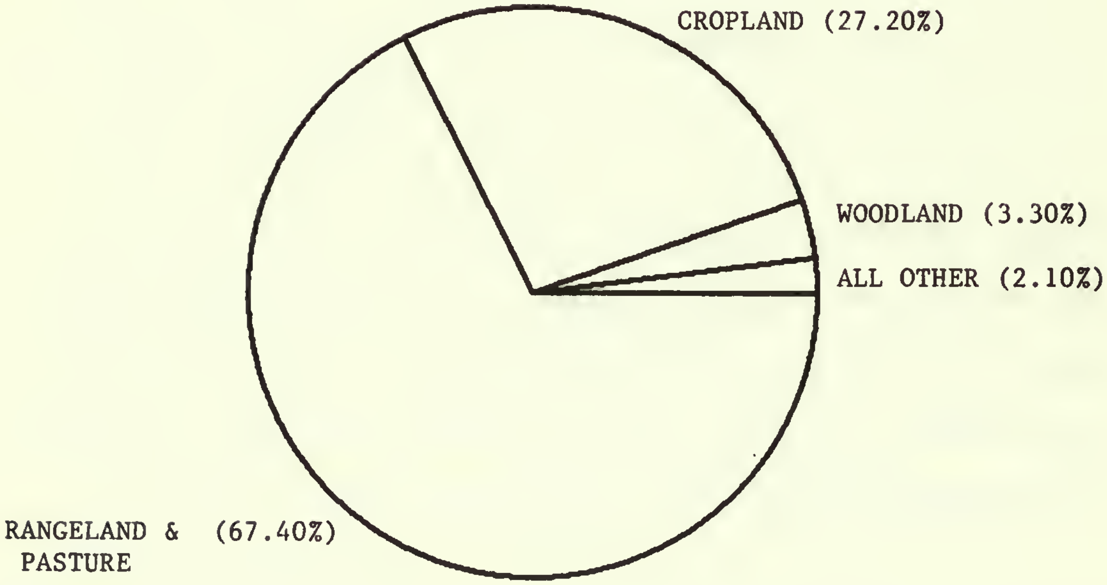
The 1984 production of small grains (wheat, barley, etc.) was down 24 percent from 1983 and 37 percent from the 1982 level. This was due primarily to drought conditions in the state, especially in the primary grain-producing areas of northcentral and northeastern Montana.(3) This lower grain production was the principal cause for lower 1984 cash receipts. Crop cash receipts for 1984 were about $652 million, down from $847 million in 1983.(4) The smaller amount of cash receipts from crops caused 1984 receipts for all agricultural products to be lower than for 1983. In fact, 1984 total cash receipts from marketing of $1.3 billion were the lowest level since 1978 (Table 3).

The number of cattle and calves on Montana farms and ranches declined by about 200,000 during 1984.(5) Partly as a result of this sell-off of inventory, 1984 cash receipts for livestock of $655 million remained at almost the 1983 level ($656 million).(6)

Total cash receipts from marketing, when combined with government payments, imputed income for on-farm consumption, crop and livestock inventory adjustments, less production expenses yield net farm income (Table 3). Net farm income for Montana farmers and ranchers generally

FIGURE 5

LAND IN FARMS & RANCHES
(UTILIZATION AS PERCENT OF TOTAL)



SOURCE: U.S. DEPARTMENT OF COMMERCE, BUREAU OF THE CENSUS, 1982 CENSUS OF AGRICULTURE, VOL. I, PART 26, MONTANA, STATE AND COUNTY DATA, TABLE 1.

TABLE 2

MONTANA AGRICULTURAL OUTPUT, 1960-1984

	Cattle & Calves		All Wheat		Barley	
Year	Production (1,000 lbs.)	Number[a] (1,000 head)	Production (1,000 bu.)	Harvested (1,000 acres)	Production (1,000 bu.)	Harvested (1,000 acres)
1960	789,875	2,245	79,397	3,953	40,444	1,721
1961	742,180	2,155	54,048	3,679	26,370	1,465
1962	737,845	2,133	79,332	3,510	54,961	1,802
1963	828,865	2,325	92,294	3,937	44,663	1,514
1964	927,420	2,627	93,752	3,877	49,692	1,529
1965	948,420	2,758	105,350	4,140	50,050	1,300
1966	985,345	2,841	99,694	3,745	63,564	1,651
1967	973,940	2,869	119,136	4,734	37,022	1,255
1968	1,062,940	2,984	125,869	4,550	42,735	1,155
1969	1,066,560	2,984	99,754	3,750	67,914	1,617
1970	1,089,015	3,014	85,167	3,383	65,132	1,714
1971	1,122,103	3,165	112,011	4,314	58,800	1,680
1972	1,103,350	3,165	98,831	3,704	64,013	1,707
1973	1,053,950	3,197	96,714	4,052	60,000	2,000
1974	1,035,930	3,380	120,108	4,857	37,500	1,250
1975	963,050	3,340	155,925	4,975	50,700	1,300
1976	967,940	3,150	167,295	5,415	52,065	1,170
1977	880,635	2,980	130,920	5,060	52,195	1,430
1978	941,570	2,680	146,050	4,840	55,900	1,300
1979	882,185	2,607	116,475	5,125	40,560	1,040
1980	995,375	2,645	119,800	5,100	44,100	1,050
1981	1,098,045	2,675	172,830	5,820	56,760	1,320
1982	1,024,395	2,900	180,320	5,360	76,440	1,560
1983	1,200,700	2,990	136,930	4,455	77,700	1,850
1984	N/A	3,150	104,655	4,640	59,080	2,110

[a] Inventory beginning of year.

N/A - Not available.

SOURCES: Montana Department of Agriculture, and Montana Crop and Livestock Reporting Service, U.S. Department of Agriculture, Montana Agricultural Statistics, various years; and "Montana Crop and Livestock Reporter", January 29, 1985.

TABLE 3

MONTANA AGRICULTURAL RECEIPTS & INCOME, 1970 - 1984

Year	Cash Receipts[a] (millions of current $)	Net Farm Income[b] (millions of current $)	Net Farm Income[c] (millions of 1983 $)
1970	$ 603	$ 237	$ 547
1971	616	198	438
1972	825	344	735
1973	1,125	546	1,103
1974	1,164	369	677
1975	1,060	343	584
1976	1,066	181	293
1977	971	68	104
1978	1,214	206	295
1979	1,391	28	37
1980	1,405	89	106
1981	1,412	168	184
1982	1,562	53	55
1983	1,503	37	37
1984	1,308	-153	-148
1970-74 Average	867	339	700
1975-79 Average	1,140	165	263
1980-84 Average	1,438	39	47

[a] Excludes government payments.

[b] Net income of self-employed farmers and ranchers from all agriculturally related sources including government payments, imputed income from on-farm consumption, and product inventory adjustments.

[c] Net farm income adjusted for inflation.

SOURCES: U.S. Department of Agriculture, Economic Research Service, Economic Indicators of the Farm Sector: State Income and Balance Sheet Statistics, 1983: U.S. Department of Agriculture, Montana Crop and Livestock Reporting Service, "Montana Crop and Livestock Reporter," March 25, 1985; U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System for net farm income data. Information for 1984 is preliminary and subject to revision.

has declined since 1973 (Figure 6). In 1984, income became negative, primarily because of drought, low grain and livestock prices, and continued high production expenses. Net farm income for 1984 would have been even lower if it were not for income received during the year from the federal payment-in-kind program.

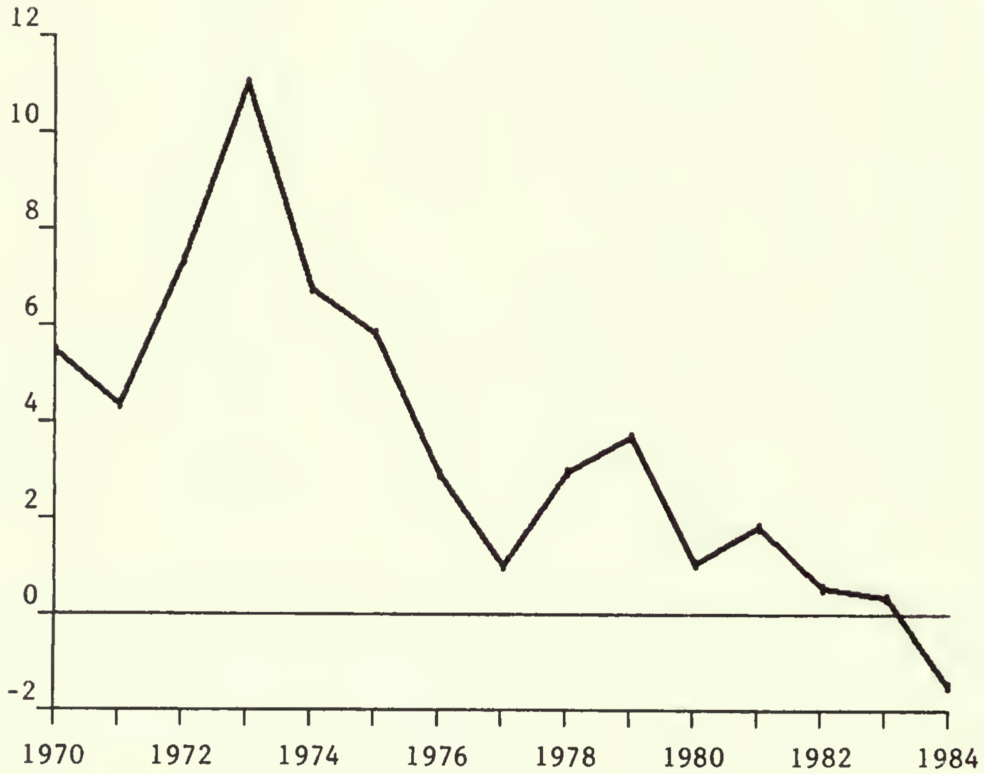
C. A Financial Crisis for Many Montana Farmers and Ranchers:

Low grain and livestock prices along with continued high production costs have resulted in low net farm income in all but one year since 1979. In 1984, net farm income was in fact negative (Figure 6). For many producers, continued financial survival has become questionable unless the current economic conditions improve. The magnitude of this problem became clearer as the result of an October 1984 financial survey of Montana agriculture conducted by the Montana Department of Agriculture, and the Montana Crop and Livestock Reporting Service.(7) The results of the survey show that Montana's agricultural producers face the same general financial problems as those faced by producers in other agricultural states. Simply put, this is not good news. Of particular concern is the financial condition of younger producers in Montana, for these are the people who will determine Montana's agricultural future. In addition, the agriculturally based communities and businesses are also being severely impacted.

If the debt-to-asset ratio exceeds 40 percent in agriculture, debt servicing costs are usually higher than income. The average 1984 debt-to-asset ratio for Montana farms and ranches increased to 28 percent, up from 20 percent in 1982. However, in 1984, 54 percent of the

FIGURE 6

NET FARM INCOME
MONTANA, 1970 - 1984
(HUNDREDS OF MILLIONS OF 1983 DOLLARS)



SOURCE: U.S. DEPARTMENT OF COMMERCE, BUREAU OF ECONOMIC ANALYSIS.

operators between the ages of 25 and 34, and 51 percent of the operators between the ages of 35 and 44 had ratios which equaled or exceeded the threshold value of 40 percent. That means that up to half of the farmers and ranchers whom one would normally expect to be running Montana farms and ranches in the year 2000 are under severe financial pressure.

One of Montana's potential sources of new wealth is to increase the level of management of its average agricultural producers. Unfortunately, information from other sources shows that many of the younger operators are both among the most productive managers as well as those in the deepest financial trouble.

The current financial crisis is of such magnitude and has existed for a long enough period of time that it can at best be expected to moderate only slowly over the next several years due to market forces alone. Every agriculturally related business and community in Montana incurs the same general financial problems faced by farmers and ranchers.

Land prices have also begun to decrease. Prices for agricultural land hit their U.S. high in 1981 and have decreased since that time. In Iowa, for example, land prices have decreased 30 percent since that peak with a 17 percent decrease coming in the last year. Montana land prices did not increase as rapidly as Midwest land prices and their subsequent decrease has not been as sharp. However, there have been some special situations in Montana where land prices have fallen sharply. Some cow/calf ranches are selling for as much as 30 to 40 percent less than they did two years ago. The same is true for irrigated hay land. While these are special cases and the decreases are much greater than average, there is strong evidence of decreasing land prices in Montana. At the same time in some areas, land prices seem to be holding fairly steady.

The survey shows that both delinquency on loans and foreclosures, while still low in absolute numbers, are much higher than they were in 1981. Most financial institutions feel the quality of their farm and ranch loans have declined. More farmers and ranchers are being refused operating loans. Over 9 percent of farmers and ranchers surveyed believe they can only survive one more year, and only 55 percent believe they will be able to stay in business for five years if current conditions continue. For many Montana farmers and ranchers, the phrase "financial crisis" is an accurate description of their current situation.

D. Sustaining the Competitive Strength of Montana Agriculture:

In Section A, the stress was placed on the need to understand and hopefully to influence the national and international forces that determine the demand for Montana's agricultural products. Montana agricultural products, like almost all other goods and services in an economic system, have value because someone wants those products more than they want something else. In the case of Montana agriculture, the arrival of the railroads after 1879, the collapse of world agricultural trade in the 1920s and 1930s, the devaluation of the U.S. dollar during the 1970s, and the impact of U.S. monetary and fiscal policies in the 1980s all have had dramatic impacts on Montana's farmers and ranchers.

In order to experience prosperity, Montana agriculture must either adapt to changes like the arrival of the railroads in territorial days, or the situation must revert back to more normal conditions as occurred with regards to world trade and will eventually happen with U.S. fiscal and monetary policies. In the meantime, Montana's agricultural producers face at least two problems. First, Montana has to maintain a comparative advantage in agriculture. Second, Montana's farmers and ranchers have to survive financially until the situation improves.

Comparative advantage is a dynamic concept and Montana will have to actively strive to maintain a comparative advantage in the production of grains, beef, and other products. If nothing is done, Montana's competitive position will be eroded over time. One of the major components of a strong competitive position for Montana agriculture is the management capabilities of the approximately 24,000 farmers and ranchers in the state. Not all farmers and ranchers have equal management skills and abilities. One of Montana's most important potentials for new wealth would be to implement programs which improve the management skills of the average operators to the level of management found on the better Montana farms and ranches. The best agricultural managers in Montana are probably among the best found anywhere in the world. However, good management is not by itself enough to maintain a competitive agriculture.

Farmers and ranchers need a well developed infrastructure to be able to maintain their competitive strength in a dynamic world. That infrastructure includes all of the activities needed to support a modern commercial agriculture. Such an infrastructure includes such things as farm implement and feed dealers; banks and other financial institutions;

adequate marketing channels; and a host of public sector activities such as roads, a system of property rights which includes the ability to enforce contract rights; and information and materials for cost-effective production.

In periods of low prices, some people voice the opinion, "We already have too much production. We don't need to find out how to produce more." That sort of attitude is understandable, but if the competitive strength of Montana producers is not maintained relative to other producing areas, Montana producers will not be able to survive as a dynamic world moves towards the future. Much of the new knowledge which is needed to maintain this competitive strength is site-specific to Montana.

Redwin, a variety of winter wheat released by the Montana Agricultural Experiment Station in 1979, is an example of an effort to maintain the competitive strength of Montana's agriculture. Much of the financial support for this variety came from the Montana Wheat Research and Marketing Commission. It took over ten years of research work to develop this variety. The first cross for Redwin was made in 1969 and seed could not be made available for commercial production until 1982. By 1983, Redwin was the number one hard red winter wheat variety seeded by Montana producers and it accounted for 35 percent of the acreage planted to winter wheat in 1984. The protein content of Redwin is from 1 to 1.5 percent higher than for other varieties used in the state; it is the most shatter-resistant variety available; it is one of the most drought-resistant varieties being used in Montana; and its yields have been good. Without a continual flow of this kind of new information and new material, Montana producers would soon find their competitive strength greatly weakened.

Financial survival for each Montana farmer and rancher under present economic conditions involves problems which are unique to each operation. Some, because of a combination of good management and good luck, will find that financial survival will require, as it always has, the mere avoidance of gross foolishness. Others, who are equally good managers but with a run of bad luck, will find that the struggle to survive will require great effort, a good deal of thought and analysis as well as close work with creditors, suppliers, and buyers. Survival for most Montana producers under current economic conditions will require a combination of management skill and good luck. Not all will succeed. However, the probability of financial survival, even under current economic conditions, can be influenced by both individual effort and appropriate private and public support.

E. The Short-Term Outlook for Montana's Agriculture:

Most of the factors affecting the economic outlook for the next two years have already been discussed and only the main points will be summarized here. While all agricultural commodities are important, the small grains and beef industries in Montana account for about 85 percent of the agricultural cash receipts in Montana. Both of these industries have suffered from drought during 1984, particularly in parts of eastern Montana. The best forecast we can make for weather during the next few years is that normal weather conditions will prevail. In the case of forecasting economic conditions for the next few years, however, we have little basis to expect a return to more normal conditions that would mean significant improvements in both beef and wheat prices.

For the small grains and beef industries, the long-term forecasts are much more optimistic. However, in order for Montana farmers and ranchers to be able to enjoy the better economic times that are sure to come, they must first survive the current short-term crisis. The same statement can be made about agriculturally related businesses and communities.

Beef prices have already begun to improve, but the price improvements have at best been small and far short of the level of price increases which must occur if most Montana ranchers are to be able to cover their cash costs and current capital replacement costs. While increases in beef prices will probably continue during 1985 and 1986, these price increases will probably continue to be modest -- too modest to permit the average rancher to cover cash and capital replacement costs.

Consumer preferences for beef appear to have changed and for any given price, consumers seem to be willing to buy less beef than they would have bought several years ago. Part of this appears to be due to changes in the consumer's perception of beef as a superior food. It may be possible for the beef industry to convince consumers that they should view beef more favorably, but at best such a change will take time. Beef also faces increased competition from other commodities, particularly poultry.

As U.S. cattle numbers adjust downward, cattle prices will improve, but competition from other commodities and changes in consumer preferences will probably mean that beef prices will top out at lower levels than would have been the case in the 1970s.

Wheat is an international commodity. While the real prices (prices adjusted for inflation) paid to the U.S. wheat producer have decreased during the past three years, the real price for wheat that many of our international customers pay and that many of our competitors receive has increased. This seemingly paradoxical set of events has occurred because of the increasing exchange rate for the U.S. dollar. Montana wheat producers will benefit as the exchange rate for the U.S. dollar decreases, but this decrease will probably be modest during the next few years.

The rest of the world is experiencing a degree of economic recovery, the international credit crisis has eased, and it is easier than it was a short time ago for many of our wheat customers to finance their purchases in the world market. However, the U.S. has a very large carryover of wheat and no significant increase in wheat prices can be expected until that carryover is reduced.

It is for all these reasons that there is no basis for expecting stronger wheat prices in 1985. If the U.S. 1985 wheat production decreases and exports continue to strengthen, some improvement in wheat prices could occur by 1986.

For the longer term, the World Bank forecasts that the 1990 real world prices of wheat will increase by 15 percent. If this were accompanied by a 15 percent decrease in the exchange value of the U.S. dollar, the wheat price received by Montana producers would increase by over $1.00 per bushel.

In summary, the economic conditions facing Montana farmers and ranchers are grim, but the bottom of the trough for beef prices is probably past, and wheat prices should improve after 1985. However, the economic recovery of Montana's agriculture will not be rapid and a return of the best conditions which existed during the 1970s is highly unlikely. The next few years will be a time of difficulties for many Montana farmers and ranchers and for most agriculturally dependent businesses and communities.

FOOTNOTES

1. This section was written by Phil Brooks, State Economist, Montana Department of Commerce.

2. Montana Department of Agriculture and Montana Crop and Livestock Reporting Service, U.S. Department of Agriculture, Montana Agricultural Statistics 1984, pp. 11-12.

3. Montana Crop and Livestock Reporting Service, U.S. Department of Agriculture, "Montana Crop and Livestock Reporter," January 29, 1985.

4. Montana Crop and Livestock Reporting Service, U.S. Department of Agriculture, "Montana Crop and Livestock Reporter," March 25, 1985.

5. Montana Crop and Livestock Reporting Service, U.S. Department of Agriculture, "Montana Crop and Livestock Reporter," February 15, 1985.

6. Montana Crop and Livestock Reporting Service, U.S. Department of Agriculture, "Montana Crop and Livestock Reporter," March 25, 1985.

7. A summary of the survey results has been published as "Montana Agricultural Finance Summary" by the Montana Department of Agriculture and the Montana Crop and Livestock Reporting Service, U.S. Department of Agriculture. Partial funding for this study was provided by the Governor's Council on Economic Development.

CHAPTER VI

MINING IN MONTANA*

by

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A. Introduction and Overview:

The mining industry in Montana consists directly of four sectors. These are metal, coal, oil/gas exploration and extraction, and the mining and quarrying of non-metallic minerals.

While there are obviously related parts of the economy such as smelting, electricity generation, refining, other manufacturing, and employment by state and federal agencies, direct mining will be the focus in this section. Also excluded is any discussion of multiplier effects of employment and income from mining.

The overall magnitude of economic activity in mining is largely determined by world and national prices of precious and non-precious metals, coal, oil and gas, and non-metallic minerals. Further, the amount of coal mining in Montana depends to some extent on the price of oil and gas, since the two minerals are direct substitutes for each other over time. Finally, the exchange rate of the U.S. dollar impacts heavily on the relative advantage that the U.S. has in international markets.

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* This section represents an expansion and updating of a previously drafted brief paper by John Brower, Associate Professor of Mineral Economics, Montana College of Mineral Science and Technology.

Montana, of course, is well known for its rich and stormy mining history which goes back to the 19th century. According to the esteemed Montana historian K. Ross Toole,

> In 1899, Montana produced 61 percent of the copper in the United States and 23 percent of the production in the world. By 1910 Montana's non-ferrous mines employed 20,000 wage earners who produced $55,000,000 worth of . . . wealth. But copper was the cornerstone. Although only thirty-five operators were involved, they employed more than 13,000 people, amounting to about three-fifths of the wage earners of the entire state. In 1909 alone, the copper mines produced $46,000,000 worth of . . . wealth. And the giant among them was the Anaconda Copper Mining Company.(1)

By 1942, during World War II, mining employment in Montana was nearly 15,000, which was the peak in the industry for at least the past four decades.(2)

The Anaconda Company itself estimates that between 1880 and 1967, 17 billion pounds of copper were recovered in Montana out of 377 million tons of ore. By 1978 the figure for copper mined grew to 20 billion pounds.(3) The value of that copper, at 1980 prices of about $1 a pound, is about $20 billion.

The Anaconda Company (now a subsidiary of Atlantic Richfield, or ARCO) closed its mining and smelting operations in Montana in 1983 after years of decline in the industry. In 1984, wage and salary employment in the entire metal mining industry was about 1,200, which was but a small fraction of peak employment of just the Anaconda operation. In the first three quarters of 1984, there were an average of about 100 establishments with a payroll in the metal mining industry in the state.(4)

Table 4 provides information on prices of mineral products from 1960 through 1984. As these data show, the prices of many mining commodities have gone up dramatically in the past couple of decades, particularly for platinum, gold, silver, and crude petroleum. The price of copper, however, has decreased since its 1980 peak.

Mining in Montana was characterized by moderate growth in employment from 1970 to 1981 and then a return to a level about 1,000 employees above 1970 by 1984 (Table 5 and Figure 7).

Labor income from all mining is somewhat of a different story. As Table 6 and Figure 8 indicate, labor income in 1983 dollars grew proportionately more than employment in the 1970 through 1984 period. While income in 1970 was about $145 million, the industry generated about $235 million in 1984 (in constant 1983 dollars), which represented growth in income of 62 percent as compared with 16 percent employment growth over the same period.

TABLE 4

SELECTED MINERAL PRODUCTS
AVERAGE PRICES: 1960 - 1984
(excludes Alaska & Hawaii, except as noted)

Year	Copper,[a] electrolytic (¢/lb.)	Platinum[b] ($/troy oz.)	Gold ($/fine oz.)	Silver ($/fine oz.)	Lead[c] (¢/lb.)	Zinc[d] (¢/lb.)	Aluminum,[e] delivered (¢/lb.)	Bituminous Coal[f] ($/short ton)	Crude Petroleum[f] ($/bbl.)	Sub-bituminous Coal[g] ($/short ton)
1960	32.5	83	35.00	0.91	11.9	13.0	26.0	4.69	2.88	N/A
1965	35.4	100	35.00	1.29	16.0	14.5	24.5	4.44	2.86	N/A
1970	58.2	133	36.41	1.77	15.8	15.3	28.7	6.26	3.18	N/A
1971	52.0	121	41.25	1.55	13.9	16.1	29.0	7.07	3.39	N/A
1972	51.2	121	58.60	1.69	15.0	17.8	26.3	7.66	3.39	N/A
1973	59.5	150	97.81	2.56	16.3	20.7	25.3	8.53	3.89	N/A
1974	77.3	181	159.74	4.71	22.5	36.0	34.1	15.75	6.87	N/A
1975	64.2	164	161.49	4.42	21.5	39.0	39.8	19.23	7.67	N/A
1976	69.6	162	125.32	4.35	23.1	37.1	44.5	19.43	8.19	N/A
1977	66.8	162	148.31	4.62	30.7	34.4	51.6	19.82	8.57	N/A
1978	66.5	237	193.55	5.40	33.7	31.0	54.0	21.78	9.00	N/A
1979	93.3	352	307.50	11.09	52.6	37.3	61.0	23.65	12.64	N/A
1980	102.4	439	612.56	20.63	42.5	37.4	71.6	24.52	21.59	11.08
1981	85.1	475	459.64	10.52	36.5	44.6	76.0	26.29	31.77	12.18
1982	72.8	475	375.91	7.95	25.5	38.5	76.0	27.14	28.52	13.37
1983	77.0	475	425.00	11.50	22.0	42.0	78.0	28.00	26.19	13.03
1984	68.6	475	360.20	8.14	27.0	46.0	81.0	25.42	28.60	N/A

N/A - Not available.

NOTE: See U.S. Bureau of the Census, Historical Statistics, Colonial Times to 1970, Series M 96, M 139, M 248, and M 262 for bituminous coal, crude petroleum, lead, and aluminum, respectively.

[a] Domestic market.
[b] Average annual producer prices.
[c] 1960-71 New York prices; beginning 1972, nationwide delivered basis.
[d] Prime western. Beginning 1971, delivered price.
[e] 99.5 percent primary aluminum ingot.
[f] Average value at the point of production; includes Alaska. Source: U.S. Energy Information Administration, Annual Energy Review and Monthly Energy Review.
[g] Per metric ton.

SOURCE: 1960-74 compiled from Metals Week (copyright); U.S. Bureau of Labor Statistics, Producer Prices and Price Indexes, U.S. Bureau of Mines, Minerals Yearbook and Mineral Commodity Summaries; thereafter, except as noted, Minerals Yearbook and Mineral Commodity Summaries. Chase Econometrics for all 1984 prices.

TABLE 5

MINING & BASIC[a] EMPLOYMENT IN MONTANA
1970 - 1984

	Mining						
Year	Metal Mining	Bituminous Coal & Lignite Mining	Oil & Gas Extraction	Mining & Quarrying of Non-Metallic Minerals	Total Mining	Total Basic	Mining as a % of Basic
1970	3,948	100	1,713	786	6,547	(D)	N/A
1971	2,897	167	1,486	731	5,281	(D)	N/A
1972	3,577	(D)	(D)	(D)	6,071	(D)	N/A
1973	3,746	394	1,578	815	6,533	(D)	N/A
1974	3,981	489	1,899	927	7,296	106,625	7%
1975	3,108	663	1,831	875	6,477	(D)	N/A
1976	2,390	754	2,068	831	6,043	(D)	N/A
1977	2,069	881	2,317	786	6,053	(D)	N/A
1978	2,030	1,239	2,849	804	6,922	103,530	7%
1979	2,144	1,346	3,356	875	7,721	106,364	7%
1980	1,917	1,393	4,664	844	8,818	103,414	9%
1981	2,306	1,404	6,825	816	11,351	102,276	11%
1982	1,765	1,283	5,463	873	9,384	97,132	10%
1983	1,514	1,289	3,749	907	7,459	95,399	8%
1984	1,200[b]	1,300[b]	4,200[b]	1,000[b]	7,600[b]	N/A	N/A

N/A - Not available.
(D) - Withheld to avoid disclosure of individual firm characteristics.

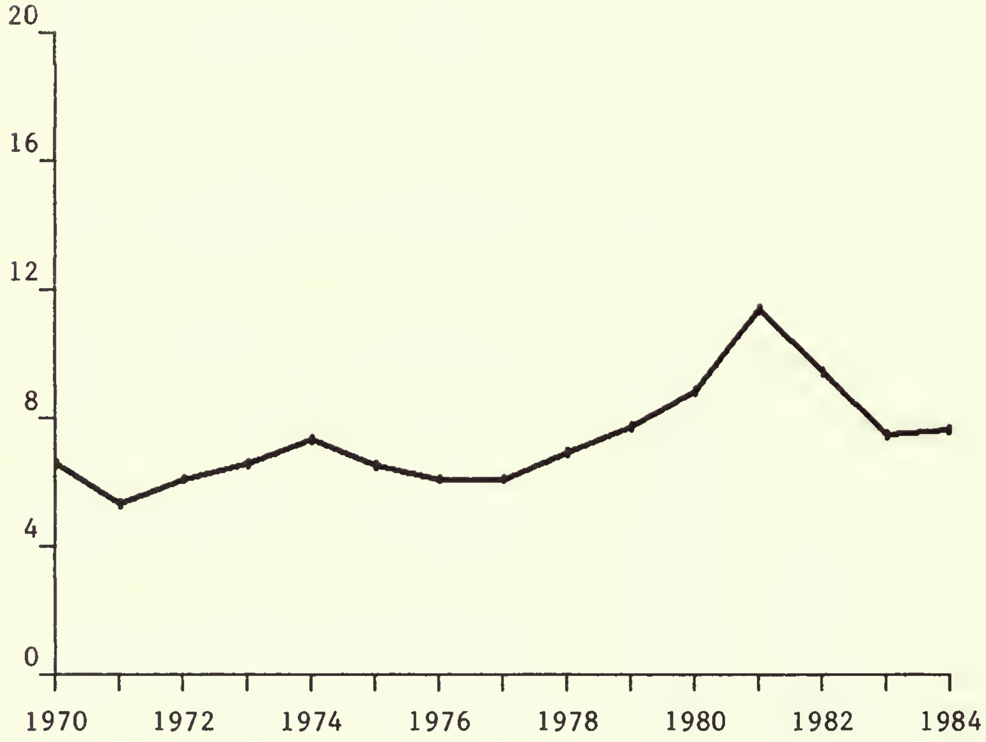
[a] Basic industries are economic sectors that primarily sell products or services out-of-state or otherwise bring money into the state.

[b] Components of mining may not add to total mining because of rounding.

SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis, August 1984, unpublished data for 1970-1983. All other calculations by the Census & Economic Information Center (CEIC), Montana Department of Commerce. Basic industries data also compiled by CEIC.

FIGURE 7

MONTANA MINING EMPLOYMENT
(THOUSANDS)



NOTE: EXCLUDES SELF-EMPLOYED.

SOURCE: U.S. DEPARTMENT OF COMMERCE, BUREAU OF ECONOMIC ANALYSIS.

TABLE 6

MONTANA MINING & TOTAL BASIC LABOR INCOME, 1970 - 1984
(in thousands of constant 1983 dollars)

Year	Mining						
	Metal Mining	Bituminous Coal & Lignite Mining	Oil & Gas Extraction	Mining & Quarrying of Non-Metallic Minerals	Total Mining	Total Basic	Mining as a % of Basic
1970	$88,871	$ 2,947	$36,254	$16,862	$144,934	$1,860,959	8%
1971	73,768	4,916	20,641	15,470	114,795	(D)	N/A
1972	88,740	(D)	(D)	(D)	145,876	2,172,380	7%
1973	94,045	13,780	34,893	19,436	162,154	(D)	N/A
1974	98,922	17,266	71,169	22,114	209,471	2,206,154	10%
1975	86,214	25,874	58,204	21,975	192,267	(D)	N/A
1976	61,938	30,056	81,752	21,527	195,273	(D)	N/A
1977	56,321	35,423	86,059	20,940	198,743	(D)	N/A
1978	56,141	50,440	82,205	20,145	208,931	2,055,398	10%
1979	60,390	55,673	127,321	22,155	265,540	1,874,245	14%
1980	58,190	54,531	158,469	21,782	292,972	1,848,879	16%
1981	67,792	55,834	212,434	18,041	354,100	1,931,974	18%
1982	49,919	53,107	183,235	18,670	304,931	1,666,374	18%
1983	47,982	53,125	113,284	20,432	234,823	1,587,140	15%
1984	35,000[a]	55,000[a]	122,000[a]	24,000[a]	235,000[a]	N/A	N/A

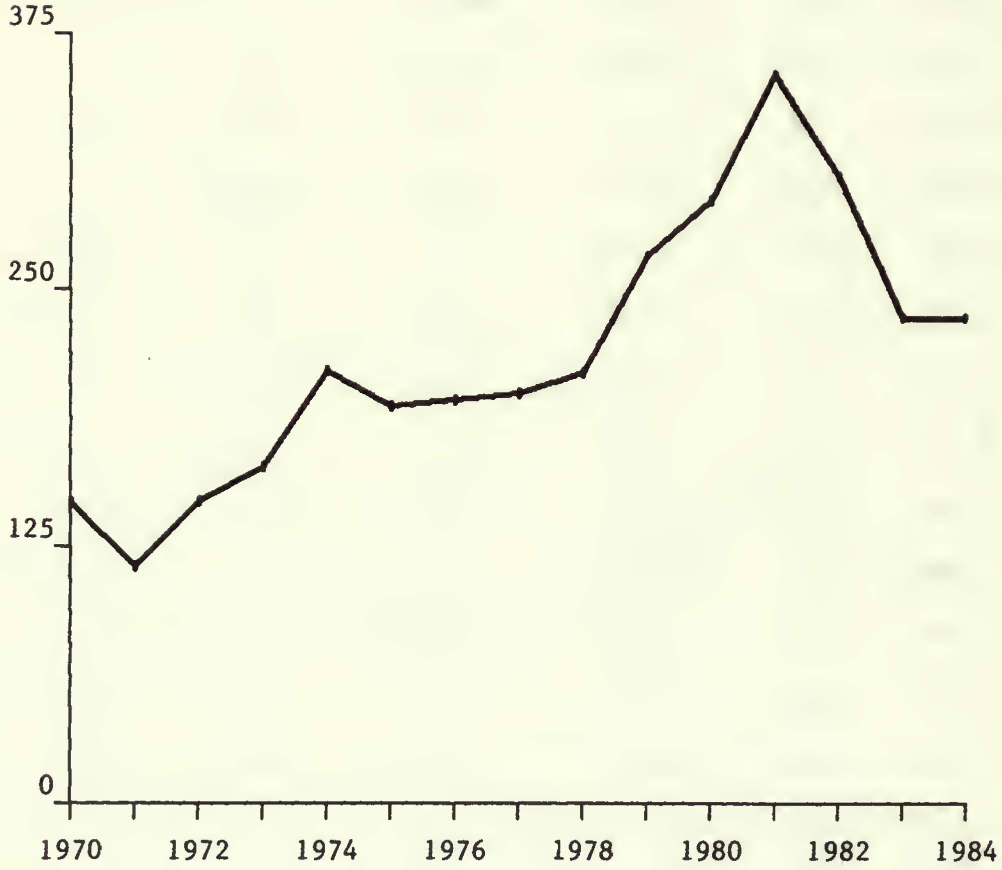
N/A - Not available.
(D) - Withheld to avoid disclosure of individual firm characteristics.

[a] Components of mining do not add to total mining due to rounding.

SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis, August 1984, unpublished data for 1970-1983; Census & Economic Information Center (CEIC), Montana Department of Commerce for the 1984 mining estimates. All conversions to constant 1983 dollars and other calculations by the CEIC. Basic industries data also compiled by CEIC. Implicit price deflators for consumption expenditures used to calculate constant dollars.

FIGURE 8

MONTANA MINING LABOR INCOME
(MILLIONS OF 1983 DOLLARS)



SOURCE: U.S. DEPARTMENT OF COMMERCE, BUREAU OF ECONOMIC ANALYSIS.

Tables 5 and 6 also offer some comparisons of mining as a percentage of total basic employment and income. Employment in mining in 1983 at 8 percent of basic employment was above the 1970 level, although not as high as the 11 percent in 1981. Labor income in 1983 from mining was 15 percent of basic income compared to 8 percent in 1970.

As Table 7 shows, there were over 670 establishments in mining in 1983 and 1984, and wages were substantially higher than in all Montana industries.

The mining industry is spread throughout Montana, but in many cases production of specific minerals is confined just to certain areas. The coal industry is primarily in the southeastern part of the state, oil and gas production is primarily in eastern and north-central Montana, talc mining is in southwestern Montana, and metal mining is more dispersed over the state.

Table 8 shows employment projections for the mining industry in Montana through 1987. The view is that mining employment in Montana will increase moderately over the period, with more growth in 1986 and 1987 as compared with 1984 and 1985.

TABLE 7

MONTANA MINING & TOTAL ESTABLISHMENTS, EMPLOYMENT & INCOME: 1983 & 1984

(covered by unemployment insurance)

Year	Establishments	Employment	Average Annual Wages per Worker
1983			
All Mining	679	7,416	$26,738
Metal	102	1,458	$30,646
Bitum. Coal	15	1,283	$34,598
Oil & Gas	507	3,770	$23,637
Non-Metallic	55	902	$22,283
All Industries	25,782	264,817	$15,212
1984*			
All Mining	672	7,299	$26,676
Metal	97	1,223	$30,316
Bitum. Coal	19	1,266	$36,556
Oil & Gas	494	3,998	$23,192
Non-Metallic	65	912	$23,868
All Industries	26,782	279,723	$15,496

* Average of first and second quarters, 1984; average wages are shown at an annual rate. Actual 1984 data when available will differ somewhat from these averages.

SOURCE: Research & Analysis Bureau, Montana Department of Labor & Industry, Employment, Wages, and Contributions, 1983, and first and second quarters, 1984.

TABLE 8

MINING EMPLOYMENT IN MONTANA: ACTUAL & PROJECTIONS
1979 - 1987
(thousands)

Actual	Employment	Projection	Employment
1979	7.7	1984[a]	7.6
1980	8.8	1985	7.5
1981	11.5	1986	8.0
1982	9.3	1987	8.4
1983	7.4		

[a] Estimate by the Census and Economic Information Center, Montana Department of Commerce based on information for nine months of 1984.

SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis and Bureau of Business and Economic Research, University of Montana, Montana Economic Reporting and Forecasting System, March 1985.

Table 9 offers projections of labor income from mining for the next few years. Income levels are also expected to increase moderately from $235 million in 1984 to $281 million a year for 1987 (constant 1983 dollars).

Markets and prices, reserves for fuel minerals, production, employment, labor income, and the detailed short-run economic outlook for each of the four parts of the mining industry in Montana will be examined below.

B. Metal Mining:

1. Markets and Prices

While once copper was king and the Montana Anaconda operation was large in the scheme of U.S. copper production, neither is currently true. The contemporary metal mining scene in the state, rather, consists of more firms than apparently was the case at some times historically and is diversified in the kinds of metals that are mined.

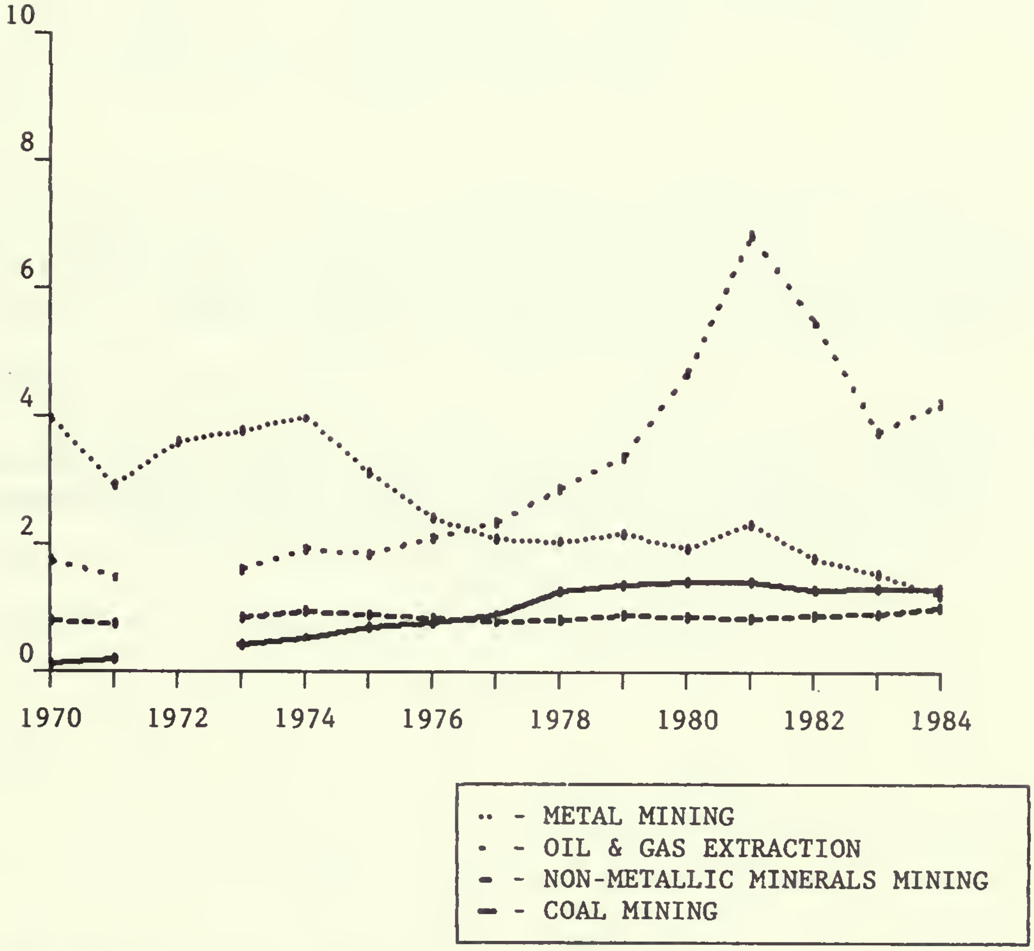
As Table 4 indicates, the price of gold escalated dramatically between 1960 and 1980. However, gold prices are not as high currently as they were a few years ago. The price of silver also has gone up. In addition, a large price increase was the case with platinum. The price for copper in 1983 was the same as it was in 1974, and was much less in real (adjusted for inflation) terms.

2. Employment(5)

Table 5 and Figure 9 indicate that metal mining was the largest

FIGURE 9

MONTANA EMPLOYMENT IN MINING: 1970 - 1984
(THOUSANDS)



NOTE: EXCLUDES SELF-EMPLOYED. MISSING DATA POINTS INDICATE THAT DATA ARE WITHHELD FROM PUBLICATION TO AVOID IDENTIFYING INDIVIDUAL FIRMS.

SOURCE: U.S. DEPARTMENT OF COMMERCE, BUREAU OF ECONOMIC ANALYSIS.

TABLE 9

LABOR INCOME FROM MINING: ACTUAL & PROJECTIONS
1979 - 1987
(millions of dollars)

Actual	Current $	1983 Constant $	Projection	Current $	1983 Constant $
1979	$202	$266	1984[a]	$243	$235
1980	246	293	1985	260	243
1981	322	354	1986	291	262
1982	294	305	1987	327	281
1983	235	235			

[a] Estimate by the Census and Economic Information Center, Montana Department of Commerce based on information for nine months of 1984.

SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis and Bureau of Business and Economic Research, University of Montana, Montana Economic Reporting and Forecasting System, March 1985.

mining employer from 1970 through 1975, but it fell to second place in the period 1977-1983, and to third place in 1984.

Employment in metal mining has declined substantially over this 15-year period, from about 4,000 workers in 1970 to only 1,200 in 1984. The decline in employment was particularly marked from the mid-1970s to 1984. In 1984, metal mining employment was only about 30 percent of employment in the industry in 1970. A major part of the reduction occurred from the cutback and eventual closure in 1983 of the Anaconda/ARCO operation at Butte.

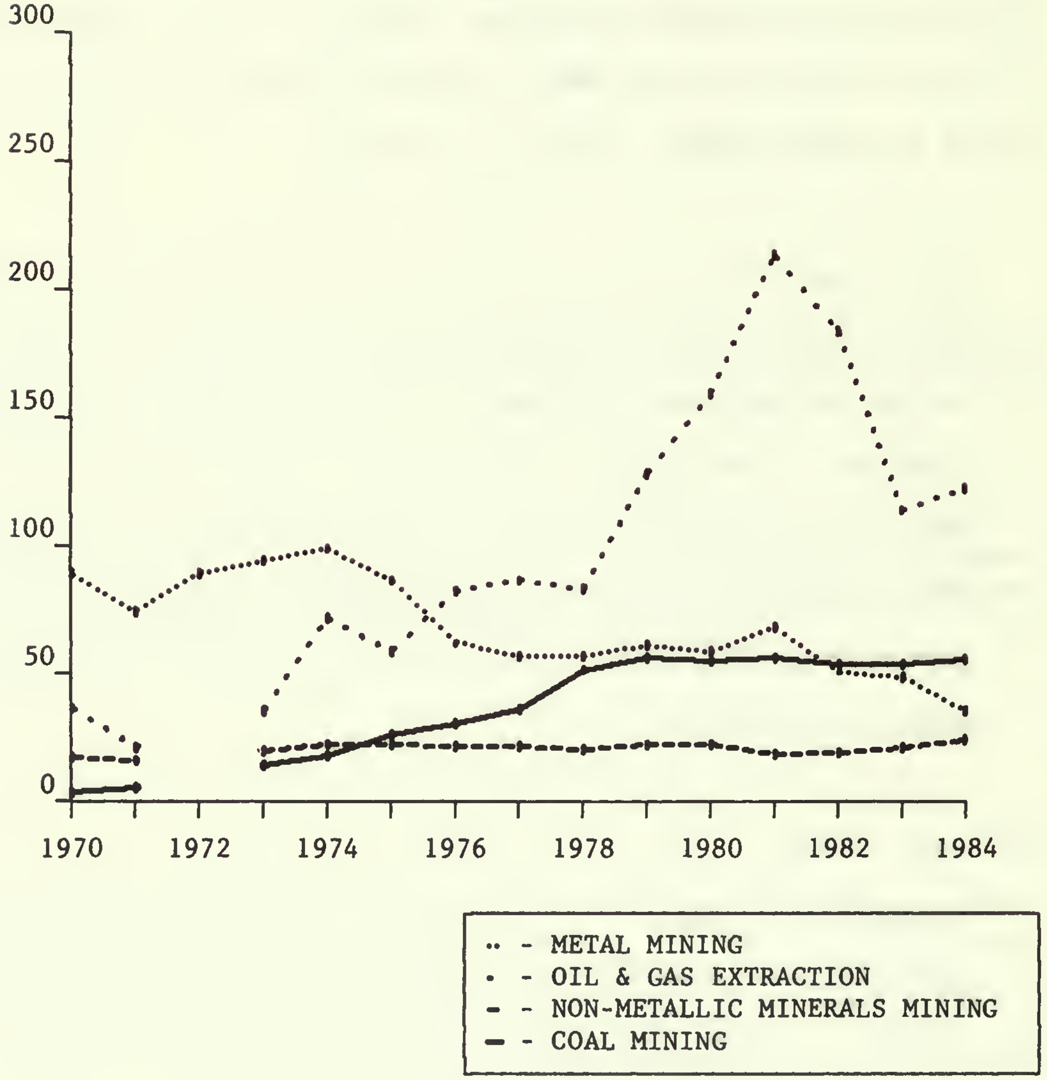
A new large-scale silver and copper mine began full production in 1982 near Troy, in the northwest part of the state. Employment in mining has also been generated by other new mines in recent years. Examples are the Zortman and Landusky gold/silver operations in Phillips County and the Golden Sunlight gold mine near Whitehall in Jefferson County east of Butte. There are a number of other smaller gold mines in the state. Montana also has one of the two antimony mines in the nation.

3. Labor Income

As Table 6 and Figure 10 show, for the period 1970 through 1984, labor income in constant 1983 dollars peaked in 1974, at nearly $100 million. In 1984, labor income in the industry was only about $35,000,000, only one-third the 1974 level. A big part of the decline was from the Anaconda/ARCO scale-down and closure in Butte. The remaining jobs, however, were highly paid. For the first half

FIGURE 10

MONTANA LABOR INCOME FROM MINING: 1970-1984
(MILLIONS OF 1983 DOLLARS)



NOTE: MISSING DATA POINTS INDICATE THAT DATA ARE WITHHELD FROM PUBLICATION TO AVOID IDENTIFYING INDIVIDUAL FIRMS.

SOURCE: U.S. DEPARTMENT OF COMMERCE, BUREAU OF ECONOMIC ANALYSIS.

of 1984, metal mining wage and salary workers were paid at a $30,316 annualized wage rate.

4. Metal Mining Short-Term Outlook (6)

The future of metal mining is difficult to project since the major determinants will be prices of metals internationally and the exchange rate of the dollar. However, there are several metal mining projects currently in the permitting process administered by the Department of State Lands. Obtaining permits is the first step for the development of any major mining project.

Centennial Minerals, Ltd. of Vancouver, British Columbia hopes to open a gold, silver, zinc, and lead mine near Wickes, Montana, which is south of Helena in Jefferson County. This open pit mine would have approximately a ten-year life and would employ about 340 people in all aspects of the operation when full production is reached three years after construction. A peak of 551 workers would construct the mine in a 15-month period. Construction in 1985 is a possibility, according to Centennial, or in 1986, according to the Montana Department of State Lands.

Homestake Mining Company and the American Copper and Nickel Company may jointly open a gold and silver mine near Jardine, Montana, just north of Yellowstone National Park. Construction could be as soon as 1986 with mining beginning in 1987. About 150 jobs would result from this mine with an expected life of about 20 years.

The Stillwater Mining Company -- a joint venture of Anaconda Minerals (ARCO), the Johns Manville Company, and Chevron -- hopes to mine platinum, pladium, lead, rhodium, iridium, osmium, ruthenium, and some gold near Nye, Montana, which is southwest of Billings in Stillwater County. Construction could occur in 1985 or 1986 and employ 320 workers at the peak of activity. The mine and mill workforce would be 223 in the operating phase, which might be as long as 25 years.

ASARCO may open a silver and copper mine at Rock Creek, near Noxon, Montana in the northwestern part of the state. About 300 construction workers would build the mine in two and one-half years. At full operation, the mine would employ 350 to 375 workers over a life of 24 to 29 years. Pre-mine development could occur by mid-1987.

Coca Mines has permits for a silver mine in Flathead County near Niarada, out of Polson. There is the possibility of the mine beginning construction, which would take 12 to 15 months, in the spring of 1985. Mining employment would be in the area of about 100 workers.

Still other possible mines are a small underground silver mine in Meagher County operated by Hecla, Inc. which would perhaps employ 30 workers over a ten-year life, and an Amax gold underground mine in Marysville, near Helena, which would employ a workforce of 15.

U.S. Borax has been doing preliminary assessment of minerals in the Cabinet Mountains near the existing ASARCO operation in Lincoln County. Amselco also is doing work in the Cabinets in Sanders County. Aries is drilling west of Butte right off the Montana Tech campus on Anaconda property for silver and some gold. Finally, Western Energy, a subsidiary of The Montana Power Company, is examining gold mining possibilities near Winston, Montana, southeast of Helena. This project could possibly employ 200 people, produce 10,000 tons of ore per day, and could last 20 years or so.

There are also a number of other proposed small mines that are possibilities in the short-run future.

Together, these projects would employ over 1,000 people and would constitute a significant increase in metal mining employment and labor income in Montana.

C. Coal

1. Markets and Prices (7)

About 90 percent of the coal mined in Montana is sent by rail to out-of-state steam-electric plants. In 1982 more than one-third of the coal was consumed by utilities in Minnesota. In the same year, 2.8 million tons of coal were consumed in Montana and 93 percent of it was used to generate electricity. Montana consumption increased to about 3.2 million tons in 1983 with 96 percent used to generate electricity.

The 1984 estimated average mine price for coal in Montana was $13.40 per ton, which was $0.70 less than in 1983.

2. Reserves

About 25 percent of the demonstrated coal reserves in the United States are in Montana. These reserves amount to about 120 billion tons. Included is 57 percent of the subbituminous coal, or 103 billion tons, and 35 percent of the lignite demonstrated reserve base (16 billion tons).(8)

3. Production

Montana surface mines produced nearly 29 million tons of subbituminous coal and lignite in 1983. This was a 3 percent increase over 1982. The 1984 production was about 33 million tons, which was a 14 percent increase over 1983. However, this was only about the level of coal mining in 1981.(9)

Since 1974, Big Horn County in southeastern Montana has been the leading coal producer. Rosebud County is also a big coal mining area. The Rosebud coal bed, which is found in these counties, was the 12th largest coal mining producing area in the United States in 1981.(10)

4. Employment

As Table 5 and Figure 9 show, jobs in coal mining in Montana during the period 1970 to 1984 grew from only 100 to a peak of 1,404 in 1981. The 1984 level was about 1,300.

In 1984, miners worked for 19 establishments in the state (see Table 7). Of these, Western Energy, Decker, Westmoreland, Peabody, and Pacific Power and Light, all in Rosebud and Big Horn counties, employed most of the coal miners.

5. Labor Income

Labor income in constant 1983 dollars from coal mining was under $3 million in 1970. By the peak in 1981, labor income was nearly $56 million. In 1984, labor income from the industry was slightly below the 1981 level (Table 6 and Figure 10).

Jobs in coal mining are generally very well paid. During the first half of 1984, the annualized average wage rate per coal employee was about $36,500 (see Table 7). Only employees in the securities/ commodities brokerage sector were better paid during this period.

6. Short-Term Outlook

The markets in which Montana sells its coal are in general characterized by very low population growth and correspondingly restrictive plans for new or expanded coal-fired power plants. The market for coal may be fairly saturated. And there is uncertain demand for Montana's low-sulfur coal compared to coal available from, for example, Illinois and West Virginia. There is also a lot of coal available in the U.S. However, coal contracts are written for long periods of time, such as 20 years, with built-in minimum purchase requirements. Given all of these factors, the short-run (next several years) outlook for Montana coal is that production and associated employment are likely to remain roughly at current levels.(11)

In the longer run, anything is possible given the enormous coal resource in Montana. Montco, for example, has permits necessary to open a major mine just east of the Tongue River from the Northern Cheyenne reservation in Rosebud County. There are efforts to build a new rail line to transport coal from the proposed Montco mine, and other possible mines in the same general area.

D. Oil and Gas:

Oil and natural gas together supply about 75 percent of the energy requirements in Montana. Supplies of these resources are adequate today; however, market shortages have occurred in the past decade. The result has been a tendency to price oil and gas at their market values.and a corresponding escalation of prices in recent years.(12) Almost 20 percent of gas reserves are associated with crude oil nationally, while in Montana the figure is only 7 percent.(13)

1. Oil Markets and Prices

The big news of the oil industry in the 1980s has been the move from a regulated to a deregulated industry by executive order of the President on January 28, 1981. One effect of deregulation was to continue the trend of the consolidation of retail markets concentrating on high-volume sales rather than geographic coverage. Thus several companies, including Mobil, Texaco, Phillips, and Union Oil, began to pull out of the Montana retail market.(14)

2. Natural Gas Markets and Prices (15)

Sales of natural gas in Montana were 51 billion cubic feet in 1982. Almost 75 percent of this was used by commercial and residential customers.

Statewide, also in 1982, all consuming sectors paid $4.83 per thousand cubic feet (Mcf) for natural gas. Residential customers paid an average of $4.46 per Mcf, while industrial customers paid an average of $5.49 per Mcf. Commercial customers spent an average of $4.46 per Mcf. The average consumption in 1982 for residential consumers was 121,000 cubic feet of natural gas at a cost of $538.

Compared to average U.S. prices, particularly in Montana Power Company's market area, Montana natural gas is relatively inexpensive.(16)

3. Oil Reserves

Proved oil reserves in Montana are about 200 million barrels. New discoveries since 1968 -- when reserves were 450 million barrels -- have not replaced the state's annual production since then.

Montana's proved reserves are only .6 percent of total U.S. oil reserves; however, the U.S. Geological Survey (USGS) indicates that Montana has the geological potential for providing a larger share of the oil supply. According to USGS data, an additional 2.2 billion barrels of crude oil may be discovered using present methods. This would allow a production level of 30 million barrels a year for approximately 80 years. Montana's oil resource could represent 2 to 3 percent of the country's total reserves of petroleum.

4. Natural Gas Reserves

While Montana has less than 1 percent of the nation's known natural gas reserves, the state's geological potential indicates a possible improvement in this relative position.(18) Proved reserves of natural gas in Montana were 870 billion cubic feet as of the end of 1982.(19)

According to USGS data, the Montana portion of the Overthrust Belt has the greatest potential for discoveries. The area, however, is also the most speculative.(20)

5. Oil Production

Oil production in Montana in the period from 1965 into the 1980s has been in the general area of 30 million barrels a year except for the mid- to late-1960s. Peak production was in 1968 at 48 million barrels.(21)

There are five major oil basins in Montana. Of these, the Williston Basin in the northeastern corner has shown increased production in recent times. Production in the Sweetgrass Arch and Bearpaw Uplift in the northern part of the state comes from nearly 60 percent of the state's 4,020 active oil wells. Production there has stabilized at 3.6 million barrels in the past several years. This basin produces less per well so that only 12 percent of production originated there.(22)

The other three basins -- Big Snowy in central Montana, the Big Horn Basin in the south-central part of the state, and the Powder River Basin in southeastern Montana -- have experienced declining production in recent years.(23)

6. Natural Gas Production (24)

The period 1965 through 1981 was characterized by substantial production increases, although annual production varied between 20 and 60 billion cubic feet (bcf) during the period.

An exploration boom occurred in 1981 with a corresponding increase of 14 percent in the total active wells to 2,142, and an increase in gas production. Gas production in 1982 was slightly below the 1981 level at 58.2 bcf.

7. Employment

As Table 5 and Figure 9 indicate, oil and gas extraction was the largest mining sector, with about 4,200 jobs in 1984. However, employment in the industry was down substantially from its peak of 6,825 workers in 1981.

8. Labor Income

Table 6 and Figure 10 show that oil and gas labor income in 1970 was about $36 million in 1983 dollars. The peak in the time period analyzed here was $212 million in 1981. By 1984, labor income had fallen dramatically to $122 million.

9. Oil Short-Term Outlook

The production of oil has been relatively steady in the area of 30 million barrels a year. The drilling rig count in 1984 was up from 1983. However, the current ample world oil supply will keep prices down if there are no major political disruptions that reduce the supply of oil provided by the major oil-producing nations, including OPEC nations. There is therefore no reason to expect a boom in oil exploration in the next few years.(25)

One view is that Montana's oil areas are thoroughly explored and drilled, and there is little likelihood of major new discoveries.(26) Another view is that there are many unknowns in the business, and results of recent exploration have often been kept secret. By way of comparison, hundreds of wells were drilled in the Wyoming Overthrust Belt before major commercial discoveries were made. In the Montana Overthrust Belt there have been only dozens of attempts.(27) It is therefore possible that there could be major surprises in the Montana oil industry.

E. Mining and Quarrying of Non-Metallic Minerals:

The mining and quarrying of non-metallic minerals in Montana is rich and varied. Minerals available include talc, barite, limestone, gypsum, silica, clorite, calcium, bentonite, vermiculite, and phosphate rock. The industry also includes sand and gravel.

Existing mining operations in the state primarily include talc, sand and gravel, vermiculite, limestone, and phosphate rock. Talc mined in Montana is used for talcum powder and as an inert filler for paint and other products; sand and gravel are used in construction; vermiculite is an insulating material; limestone is used to manufacture cement in the state; and phosphate rock is used in the manufacture of fertilizer in British Columbia.(28)

1. Employment

Employment in mining and quarrying of non-metallic minerals was the most stable but smallest of all of the mining sectors, as shown in Table 5 and Figure 9. In 1970, this sector had approximately 800 employees. There were about 1,000 employed in 1984.

2. Labor Income

Labor income in non-metallic minerals was also relatively stable, as Table 6 and Figure 10 indicate. In 1970, the sector generated nearly $17 million in payrolls, in 1983 dollars. In 1984, the amount was about $24 million. Average 1984 wages of hired employees were about $24,000 (see Table 5).

3. Short-Term Outlook

A small expansion in non-metallic mining and quarrying is expected in the next few years, assuming no decrease in existing operations.

A new talc mine is expected to have permits in April of 1985. This operation by Montana Talc, a subsidiary of Nicor Mineral Ventures, would be south of Ennis in Madison County, with an associated mill at Sappington Junction, close to Three Forks, in Gallatin County. The surface and underground mine would have an expected life of 13 years. Employment at the mine and mill would be 60 construction workers over a ten-month period and then 27 operating workers at the mine and 66 at the mill when fully operational. Expected wages and salaries would average about $25,000 a year.(29)

A clorite operation, run by Cyprus Minerals at Silver Star in Madison County, is expected to expand in the next few years. This mine would grow from about 15 workers currently to 35 or 40.(30)

F. Conclusions:

1. Employment

The years 1970 through 1984 were characterized by some expansion in employment in mining until 1981 and then a drop back to a level about 1,000 above 1970. In 1970 there were 6,547 jobs in mining. In 1981 the figure was 11,351, and in 1984 employment was about 7,000, excluding self-employed miners (see Table 5, above).

Employment in the industry can also be compared to basic industries in Montana as a whole, as is shown in Table 5. In 1970, mining was 6 percent of basic employment; by 1981 it rose to the high during this period of 11 percent. In 1983, mining was 8 percent of basic industry employment in Montana.

There was a changing composition of employment within the four sectors in the mining industry (Table 10). In the early part of the period examined, metal mining was the largest employer in mining. But by the end of the period, 1984, metal mining had fallen to third place behind oil/gas extraction and coal mining.

The period in question includes the birth of the Montana coal industry in its large-scale surface mine form. By 1984, coal mining was the second largest mining sector in the state.

Mining and quarrying of non-metallic minerals fell from third to fourth place in relative terms within the industry; however, it was the steadiest mining sector, providing 800 or more jobs throughout most of the period.

2. Labor Income

Labor income from all mining reached one peak in 1974, at $209 million, and a still higher peak in 1981, at $354 million, in constant 1983 dollars. Mining labor income dropped to about $235 million in 1983 and 1984 (see Table 6).

Metal mining was the only mining sector to decline in labor income over the period examined. Labor income from coal increased rapidly over 1970 levels and amounted to almost $56 million in the peak year of 1981. Oil and gas labor income grew dramatically over the period and reached its high point in the boom year 1981. By 1984, labor income from oil and gas exploration was about $5 million less than

TABLE 10

MINING EMPLOYMENT IN MONTANA, 1970 - 1984
(percent of total in each sector)

Year	Metal Mining	Bituminous Coal & Lignite Mining	Oil & Gas Extraction	Mining & Quarrying of Non-Metallic Minerals	Total Mining[a]
1970	60%	2%	26%	12%	100%
1971	55%	3%	28%	14%	100%
1972	59%	(D)	(D)	(D)	100%
1973	57%	6%	24%	13%	100%
1974	55%	7%	26%	13%	100%
1975	48%	10%	28%	14%	100%
1976	40%	13%	34%	14%	100%
1977	34%	15%	38%	13%	100%
1978	29%	18%	41%	12%	100%
1979	28%	17%	44%	11%	100%
1980	22%	16%	53%	10%	100%
1981	20%	12%	60%	7%	100%
1982	19%	14%	58%	9%	100%
1983	20%	17%	50%	12%	100%
1984	15%	17%	55%	13%	100%

(D) - Withheld to avoid disclosure of individual firm characteristics.

[a] Components of mining may not add to total mining because of rounding.

SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis, August 1984, and Census & Economic Information Center (CEIC), Montana Department of Commerce, unpublished data. Percentage calculations by CEIC.

the level that was reached in 1979. Labor income from non-metallic minerals was the most steady of the mining sectors, but by 1984 it was also the smallest. Labor income in the neighborhood of $20 million was generated from most years from 1973 to 1984.

Mining is a high-paying industry. In 1983, the average annual labor income (wages/salaries, fringe benefits, and self-employment net income) per worker was $31,500 compared with a nonfarm average of $17,500.(31) Thus it is not surprising that mining comprised a higher share of labor income from basic industries than its share of employment. In 1970, mining accounted for 8 percent of all basic income. By 1981, mining labor income was 18 percent of all basic income. In 1983, mining labor income declined to 15 percent of the total.

FOOTNOTES

1. K. Ross Toole, Twentieth-Century Montana: A State of Extremes, pp. 4 and 5.

2. U.S. Department of Labor, Bureau of Labor Statistics, Employment and Earnings, States and Areas, 1939 - 1978, p. 320.

3. Montana Historical Society, from Anaconda Company records. Personal communication with David Walters, January 18, 1985.

4. Montana Department of Labor and Industry, Research and Analysis Bureau, Employment, Wages, and Contributions, 1983 annual issue and 1st, 2nd, and 3rd quarters of 1984.

5. Information for this section comes from personal communications with the Environmental and Hard Rock Bureaus, Montana Department of State Lands, January 1985. Also from U.S. Department of the Interior, Bureau of Mines, "The Mineral Industry of Montana,", Minerals Yearbook, 1982.

6. Environmental and Hard Rock Bureaus, Montana Department of State Lands, personal communications, January 1985.

7. Lynda Steele, Montana Department of Natural Resources and Conservation (DNRC), Energy Division, Montana Historical Energy Statistics, 5th edition, p. 33. An update of some data was provided by Nancy McLane, Energy Division, DNRC, March 1985.

8. Steele, Ibid.

9. Montana Department of Labor and Industry, Safety Bureau, unpublished data, and Steele, Ibid, p. 35.

10. Steele, op. cit., p. 33.

11. John Duffield and Arnold Silverman, University of Montana, The Montana Coal Market to the Year 2000: Impact of Severance Tax, Air Pollution Control, and Reclamation Costs, and Dr. Bruce Finnie, Helena consulting economist, unpublished studies of coal markets, January 1985. Also Duffield and Silverman, Projections of Coal Demand from the Northern Great Plains Through the Year 2010.

12. Natalie Walsh, Energy Division, Montana Department of Natural Resources and Conservation, Montana Natural Gas and Petroleum Review, May 1983, p. vi. Also, Natalie Walsh, personal communication, January 1985 for the entire oil and gas section of this chapter.

13. Walsh, op. cit., p. 5.

14. Ibid., p. 17.

15. Steele, op. cit., p. 45.

16. Walsh, personal communication, January 1985.

17. Walsh, *op. cit.*, pp. 18-20.

18. *Ibid.*, p. 2.

19. Steele, *op. cit.*, p. 45.

20. Walsh, *op. cit.*, pp. 3 and 4.

21. Steele, *op. cit.*, p. 62, and Oil and Gas Conservation Division, Montana Department of Natural Resources and Conservation, *Montana Oil & Gas: Annual Review*, 1983.

22. Oil and Gas Division, *Ibid.*, and Walsh, *op. cit.*, pp. 20 and 21.

23. Walsh, *Ibid*.

24. *Ibid.*, pp. 4 and 5.

25. John C. Brower, Montana College of Mineral Science and Technology, in Bureau of Business and Economic Research, University of Montana, "Economics Montana: A Briefing from the Montana Economic Reporting and Forecasting System", December 11, 1984.

26. Brower, unpublished paper on mining in Montana, 1984.

27. Walsh, personal communication, January 1985.

28. Henry G. McClernan, Montana Bureau of Mines and Geology, *Mining and Mineral Development in Montana, 1984*.

29. Hard Rock Bureau, Montana Department of State Lands, personal communication, January 1985.

30. *Ibid*.

31. U.S. Department of Commerce, Bureau of Economic Analysis, unpublished data, August 1984.

CHAPTER VII

MONTANA MANUFACTURING

by

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For the most part, manufacturing activity in Montana consists of industries based on the state's natural resources and firms producing goods for consumption in the state. Major activities include lumber and wood products; pulp and paper; food and kindred products; printing and publishing; primary metals; stone, clay, and glass products; and petroleum products.

Most manufacturing establishments in the state are small. In 1983 -- the first year of recovery from Montana's last recession -- almost half the 1,100 manufacturing establishments in the state employed fewer than five workers during the mid-March pay period. Only 36 establishments employed more than 100 workers; among them, fifteen were in lumber and wood products.(1)

Lumber and wood products is by far the largest of the state's manufacturing industries. The paper industry is combined with wood products in this report because the two are so closely related, and to avoid disclosure of confidential data for the Missoula paperboard mill. Together, the two forest industries accounted for 44 percent of total manufacturing employment and labor income in 1979, peak of the last business cycle (Tables 11 and 12).

TABLE 11

MANUFACTURING EMPLOYMENT IN MONTANA,
1979 - 1987
(thousands)

	Actual								
	1979	1980	1981	1982	1983	1984	1985	1986	1987
All manufacturing	27.0	24.2	23.2	20.6	22.1	22.3	22.6	22.6	23.4
Forest Products	11.8	10.0	9.6	8.0	9.6	9.7	9.7	9.7	9.9
Other Manufacturing	15.2	14.2	13.6	12.6	12.5	12.6	12.9	12.9	13.5
Food & Kindred Products	4.1	4.0	3.8	3.7	3.7	3.2	N/A	N/A	N/A
Printing & Publishing	2.4	2.2	2.3	2.3	2.4	2.4	N/A	N/A	N/A
Primary Metals	3.3	2.6	2.0	1.4	1.2	1.5	N/A	N/A	N/A
Stone, Clay & Glass Products	1.4	1.3	1.2	1.1	1.1	1.2	N/A	N/A	N/A
Petroleum & Coal Products	1.0	1.0	1.1	1.1	1.0	0.8	N/A	N/A	N/A
All Other	3.0	3.1	3.2	3.0	3.1	3.5	N/A	N/A	N/A

N/A - Not available.

SOURCES: Montana Department of Labor and Industry, Research and Analysis Bureau for 1979-1984 data; and University of Montana, Bureau of Business and Economic Research, Montana Economic Reporting and Forecasting System (March 1985), for 1985-1987 projections.

TABLE 12

LABOR INCOME IN MANUFACTURING, 1979 - 1987
(millions of constant 1983 dollars)

	1979	1980	1981	1982	1983	1984	1985	1986	1987
All Manufacturing[a]	658	586	559	479	518	537	554	562	580
Forest Products	292	244	230	189	238	245	238	238	240
Other Manufacturing	366	342	330	290	280	292	316	324	340
Food & Kindred Products	82	81	79	74	73	62	N/A	N/A	N/A
Petroleum Products	44	42	46	46	45	41	N/A	N/A	N/A
Printing & Publishing	38	36	36	36	37	38	N/A	N/A	N/A
Primary Metals	(D)	91	(D)	47	39	52	N/A	N/A	N/A
Stone, Clay & Glass Products	32	29	26	25	26	30	N/A	N/A	N/A
All Other	170[b]	63	143[b]	62	60	69	N/A	N/A	N/A

(D) - Withheld to avoid disclosure of individual firm data.
N/A - Not available.

[a] Detail may not add to the total due to rounding.
[b] Includes primary metals.

SOURCES: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System for 1979-1983 data; Census and Economic Information Center, Montana Department of Commerce for 1984 estimates; and University of Montana, Bureau of Business and Economic Research, Montana Economic Reporting and Forecasting System, March 1985 for 1985-1987 projections.

After 1979, Montana's manufacturing industries -- like those in the United States -- were hard hit by the national recessions and by several permanent plant closures. Wood products activity declined sharply between 1979 and 1982, the low point of the recession, as a result of the slump in U.S. construction activity. In 1980, a sawmill and a plywood plant in Missoula closed permanently. The copper manufacturing industry, including smelting and refining activities, had been in a precarious position for years. In 1981, the smelter at Anaconda and the refinery at Great Falls ceased operation.

Smaller losses occurred in food and kindred products and in stone, clay, and glass products. Other manufacturing activities combined maintained their employment at or above the 1979 figures, although individual industries -- such as electronic equipment -- felt the effects of the recession.

Total labor income of all manufacturing workers declined by $179 million or 27 percent in constant dollars between 1979 and 1982 (Table 12).

Thanks mostly to a strong recovery by lumber and wood products, total labor income in manufacturing recorded good increase in 1983 along with modest growth in 1984. Nevertheless, as of 1984 it remained 18 percent below the 1979 level, when measured in constant dollars.

Projections from the Montana Economic Reporting and Forecasting System anticipate gains in total manufacturing activity (as measured by labor income) each year between 1985 and 1987 (Table 12). Still, the projections anticipate a level of activity significantly below 1979. The permanent losses which Montana has sustained in wood products and primary metals are simply too large to be offset in this period of time. By 1987, total labor income from manufacturing in constant dollars still may be 12 percent below 1979. Any additional shutdowns would create a larger shortfall.

A. Wood and Paper Products:

The forest industries in Montana include plants producing lumber and other sawed products, plywood, pulp and paper, particleboard, fiberboard, utility poles, mobile homes, prefabricated wood buildings, house logs, posts and poles, cedar products, and some wood-related byproducts such as turpentine. Production is concentrated in seven western counties: Flathead, Lake, Lincoln, Mineral, Missoula, Ravalli, and Sanders. In 1981, private lands supplied 54 percent of the timber harvest. Public ownership, mostly national forest lands, provided 46 percent.

Forest products (especially lumber and wood products) is one of the state's most cyclic industries. Its most prosperous year in recent times was 1979, when employment in wood and paper products peaked at approximately 11,800 wage and salary workers and total labor income climbed to $292 million (1983 dollars). By contrast, in 1982 employment had fallen to 8,000 workers, and labor income to $189 million (1983 dollars). Some of the job losses were short-term and temporary due to mill curtailments that occurred in response to the recession. Others resulted from long-term changes, such as permanent mill closures, changes in the types of plants in operation, and increased mechanization and operating efficiency.

The pulp and paper mill in Missoula provided some 150 new jobs in the early 1980s, thanks to an expansion of its production facilities. The paper industry was not affected as severely by the recession as was wood products. Only a slight decline occurred in 1981, with a strong recovery in 1983.

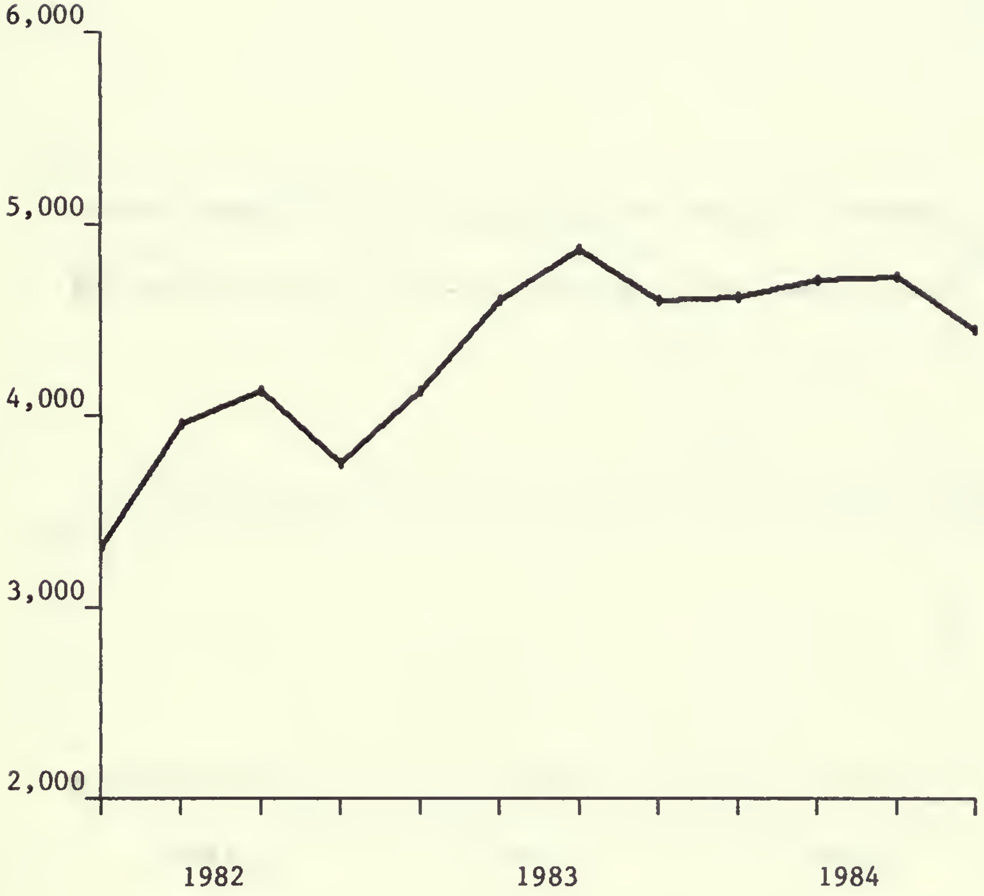
The wood products industry also rebounded from the recession in 1983. Production and employment resurged in response to a greatly improved national economy (Figures 11, 12 and 13, Table 11). Housing starts nationwide increased 60 percent between 1982 and 1983.

In 1984, production and employment remained high, although prices were low and some Montana producers reported little or no profit. Some decline in lumber production occurred in the third and fourth quarters in response to a weakening in the U.S. housing market and strong competition from Canadian imports. Nevertheless, the forest industries provided some 9,700 jobs and $245 million in labor income in 1984 (Tables 1 and 2).

The long-term structural changes described above -- increased mechanization, changes in the types of plants in operation, and the possibility of further shutdowns -- will continue to affect production and employment in wood products. So too will year-to-year fluctuations in U.S. home construction. Housing starts are projected by Chase Econometrics (February 1985) to decline from approximately 1.8 million in 1984 to 1.6 million in 1985 and 1986, and to increase to 1.7 in 1987. Projections from the Montana Economic Reporting and Forecasting System indicate a slight decline in labor income from wood and paper products

FIGURE 11

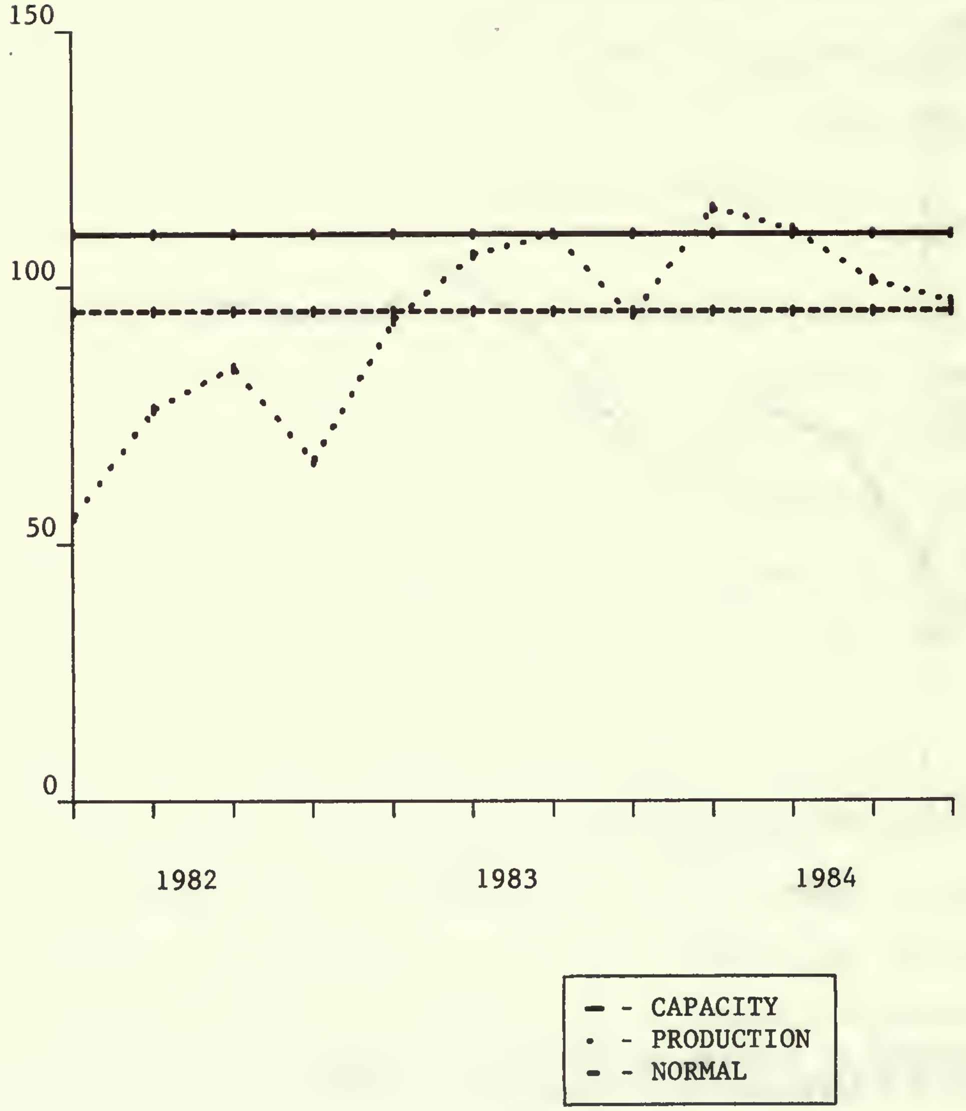
THE MONTANA WOOD PRODUCTS INDUSTRY
TOTAL PRODUCTION WORKERS BY QUARTER, 1982 - 1984



SOURCE: UNIVERSITY OF MONTANA, BUREAU OF BUSINESS AND ECONOMIC RESEARCH, MONTANA FOREST INDUSTRIES INFORMATION SYSTEM.

FIGURE 12

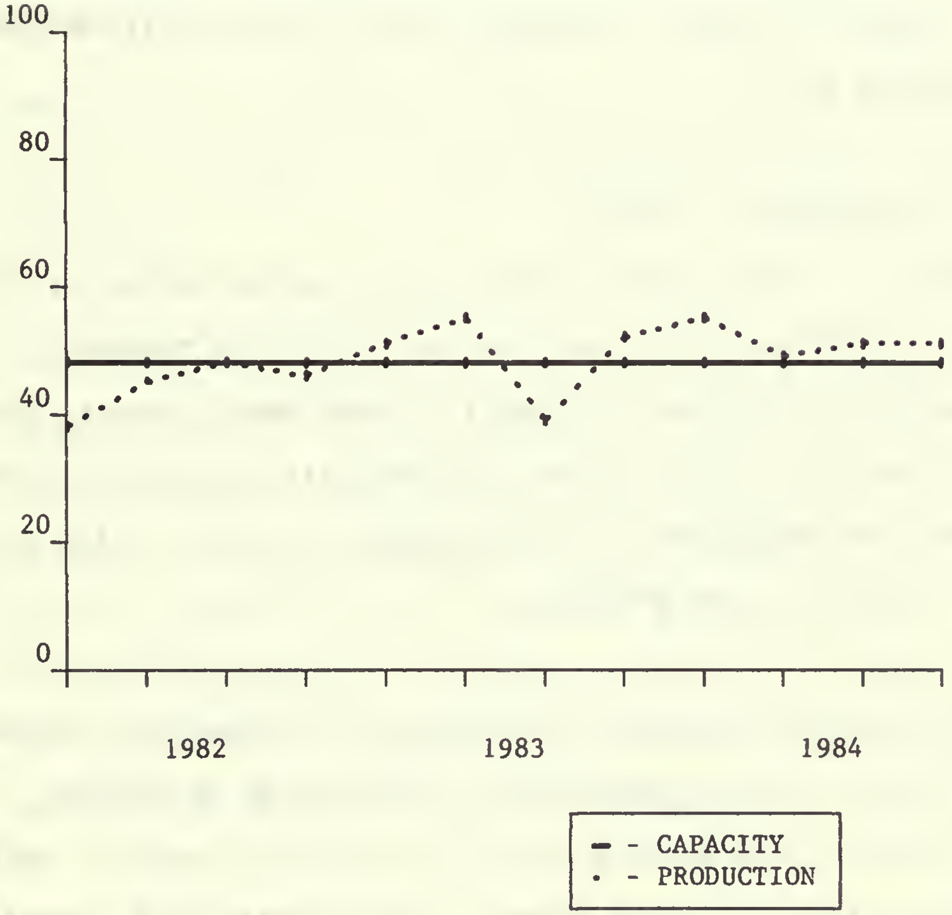
MONTANA QUARTERLY LUMBER PRODUCTION
1982 - 1984
(MILLIONS OF BOARD FEET)



SOURCE: UNIVERSITY OF MONTANA, BUREAU OF BUSINESS AND ECONOMIC RESEARCH, FOREST INDUSTRIES INFORMATION SYSTEM.

FIGURE 13

MONTANA QUARTERLY PLYWOOD PRODUCTION
1982 - 1984
(MILLIONS OF SQUARE FEET)



SOURCE: UNIVERSITY OF MONTANA, BUREAU OF BUSINESS AND ECONOMIC RESEARCH, MONTANA FOREST INDUSTRIES INFORMATION SYSTEM.

for the 1985-1987 period. Total labor income from the forest industries in 1987, after adjustment for inflation, is expected to be approximately 18 percent lower than in 1979. Wage and salary employment is projected to be some 1,900 workers or 16 percent below 1979.

B. Other Manufacturing:

Among Montana's other important manufacturing industries are food and kindred products; printing and publishing; primary metals; stone, clay, and glass products; and petroleum products. Each of these industry groups provided at least 1,000 wage and salary jobs and $25 million of labor income in 1983.

1. Food and Kindred Products

Montana's food products industry mostly serves the local population. In a number of cases, the firms involved process Montana agricultural products. Examples are meat packing plants, dairy product manufacturers, flour and feed mills, vegetable oil mills, and beet sugar plants. Other important activities include soft drink bottlers and bakeries.

Although interest exists in expanding the processing of Montana farm products in-state, employment and labor income in the food industries have declined since 1979 by about 23 percent. Declines were registered in many types of food processing with largest absolute employment drops being in meat packing. Late in 1984 the Pierce Packing Company ceased operations. Negotiations are currently in progress to try to reopen the Pierce plant.

Overall, there are few signs of growth in the food products industry.

2. Printing and Publishing

The printing and publishing industry consists mostly of newspaper publishers and commercial printers. Since 1979, considerable growth has occurred in commercial printing employment, although overall industry employment and labor income has stayed about the same. One bookbinding firm employs over 100 workers, as do three newspapers.

The industry is not likely to provide many new jobs, but it is an important stabilizer in an otherwise generally cyclical group of industries.

3. Primary Metals

Today's primary metals industry in Montana consists mostly of the aluminum plant at Columbia Falls and the ASARCO smelter at East Helena. It is a much smaller industry today than in 1979, when The Anaconda Company's smelter and refinery were in operation. Employment has dropped from 3,300 in 1979 to about 1,500 in 1984. Labor income in 1984 was about 57 percent of the 1980 figure; no earnings data are available for this industry in 1979.

The aluminum mill curtailed production and employment during the recession, but operated at reasonably high levels in 1984. Its owner, ARCO, is in the process of disposing of its metal operations. The Columbia Falls mill is for sale. If a buyer cannot be found, it may be closed. Its loss would represent a severe blow to the economies of the state and of Flathead County.

4. Stone, Clay, and Glass Products

Ready-mixed concrete plants are the largest employing group in the stone, clay, and glass industry. In addition, there are two cement plants, at Trident in Gallatin County and Montana City in Jefferson County, each of which employs over 100 workers, plus numerous other small businesses producing various glass, clay, pottery, concrete, and nonmetallic mineral products.

Because it is so involved with construction, the industry's employment and labor income declined about 12 percent between 1979 and 1982. As of 1984, it had not returned to its 1979 level, no doubt reflecting the fact that construction activity in the state remained well below 1979.

5. Petroleum and Coal Products

Five petroleum refineries currently operate in Montana; they normally provide approximately 1,000 jobs. The jobs are among the highest-paying in the state. Industry employment in 1984 averaged only about 850 workers, partly because of a labor dispute over work rules early in the year.

Refinery activity is concentrated in Yellowstone County, the location of three major refineries. Little change appears likely in their operating level over the next few years. The future of small independent refineries, not necessarily as efficient and without their own oil resources, may be less certain.

6. Other Manufacturing

Among Montana's other manufacturing activities of importance and interest are the elemental phosphorus plant in Silver Bow County, located in the area because of the availability of phosphate rock and low-cost electric power; a pencil factory in Glacier County; a diversified plant producing camouflage netting and screens, medical and food chests in Roosevelt county; and technology-intensive manufacturing industries located in various communities in the state.

C. Technology-Intensive Manufacturing:(3)

Technology-intensive industries are defined in various ways. One fairly restrictive definition was used in a recent study by the Montana Department of Commerce.(4) This study used the concentration of scientific and technical workers in an industry as the criterion for identifying technology-intensive sectors in Montana's economy. The study defined 25 specific industries within Montana's mining, manufacturing, and service sectors. A summary of the results of the study for manufacturing is presented in Table 13.

As indicated in Table 13, about three-fourths of the jobs in the more technically oriented manufacturing sectors are in petroleum refining and primary metals processing, which were discussed previously. These sectors are not always perceived as technology-intensive but nevertheless

TABLE 13

EMPLOYMENT IN MONTANA'S TECHNOLOGY-INTENSIVE MANUFACTURING SECTORS[a]
1976 - 1984

Sector	SIC[b] Code	1976 Jobs	1980 Jobs	1982 Jobs	1984[c] Jobs
Sugar & Confectionery Products	206	440	458	435	400
Misc. Publishing (catalogs, directories, maps)	274	100	130	31	38
Industrial Organic Chemicals (primarily ethanol)	286	0	21	44	57
Petroleum Refining	291	978	1,045	1,065	930[d]
Primary Smelting & Refining of Non-Ferrous Metals (alum. & lead)[e]	333	1,100	1,770	1,291	(D)
Construction & Mining Machinery	353	52	28	79	65
General Industrial Equipment	356	49	46	27	(D)
Office & Computing Machines	357	2	0	18	(D)
Communication Equipment	366	8	11	30	(D)
Electronic Components & Accessories	367	89	311	211	280
Engineering, Scientific & Research Instruments	381	2	2	3	(D)
Total Technology-Intensive Manufacturing		2,820	3,822	3,234	3,375

(D) - Data suppressed to avoid disclosure of individual firm characteristics.

[a] Assumes that a technology-intensive sector in 1982 is technology-intensive for all years.

[b] Standard Industrial Classification Code.

[c] Based primarily on average employment for the first nine months of 1984.

[d] Estimated employment without the strike at the Cenex plant.

[e] Excludes primary smelting and refining of copper.

SOURCE: Appendix E, "Technology-Intensive Sectors in Montana's Economy," Report of Recommendations of the Advisory Council on Science and Technology, Montana Department of Commerce, December 1984.

have a concentration of scientific and technical workers. The rest of the jobs are basically in sugar processing, electronic components, and general industrial equipment. The latter category is dominated by one firm in Kalispell that makes machines for washing semiconductors. The electronic components industry, which has not yet regained its pre-recession employment level, is concentrated in the Bozeman area.

FOOTNOTES

1. U.S. Bureau of the Census, County Business Patterns 1983, Montana.

2. Based largely on Charles E. Keegan III and Timothy P. Jackson, "The Future of Montana's Forest Products Industry." Montana Business Quarterly, Autumn 1984.

3. This section was written by Phil Brooks, State Economist, Montana Department of Commerce.

4. Phil Brooks, "Technology-Intensive Sectors in Montana's Economy," Appendix E to Advisory Council on Science and Technology, Report of Recommendations, Montana Department of Commerce, December 1984.

CHAPTER VIII

THE MONTANA NONRESIDENT TRAVEL INDUSTRY*

by

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The travel industry consists of portions of certain service industries (such as hotels and motels) and retail trade establishments (such as eating and drinking places) which serve travelers. This makes it very difficult to measure and analyze. The problem is in determining what portion of employment and labor income (wages/salaries, fringe benefits, and net income of self-employed persons) in industries serving travelers is attributable to their traveling customers. And, when one is concerned with measuring the industry's contribution to the economic base, the interest is primarily in employment and labor income created by the nonresident travelers who bring new money into the state.

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* The study on which this chapter is based relied on data from secondary sources. The author attempted to use the best information available, but data on travel and tourism in Montana are out of date and incomplete. Accordingly, some of the figures may not be entirely accurate, although the trends revealed are reliable. The estimates are conservative and probably err by understatement rather than overstatement.

Recently, the Montana Promotion Division of the Department of Commerce contracted with the Bureau of Business and Economic Research at the University of Montana to conduct a study of the Montana travel industry in 1983. The analysis which follows is based on that report.*

The nonresident travel industry experienced considerable growth between 1979 and 1983. The total number of jobs related to nonresident travel is estimated to have increased by about 17 percent during those years. Labor income generated by the expenditures of nonresident travelers is estimated to have grown 10 percent, from $96 million to $106 million, after adjustment for inflation. This was a notable achievement during a period of recession and increasingly unfavorable money exchange rates for Canadian visitors. It also makes the nonresident travel industry one of only two basic industries in Montana which increased their employment and payrolls between 1979 and 1983. The other was heavy construction.

The increased income from nonresident travel resulted from a growth in number of visitors. Their numbers increased from less than 2.0 million in 1979 to more than 2.2 million in 1983 (Figure 14). Following that pattern, total expenditures by nonresident travelers also are estimated to have grown over the period, from $382 million in 1979 to $423 million in 1983 after taking inflation into account (Figure 15). It was not a steady growth; small setbacks occurred in 1980 and 1982. The industry, however, has been much less cyclical than most other basic industries in the state.

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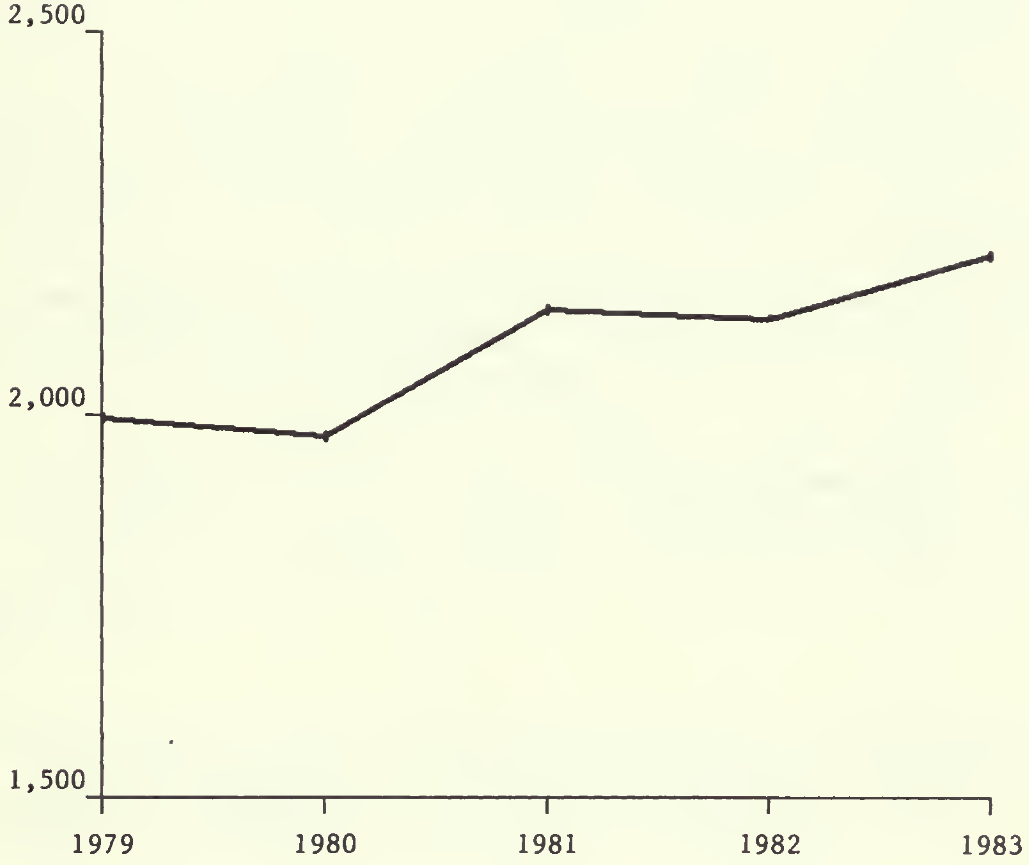
* The report was prepared by Richard Dailey.

FIGURE 14

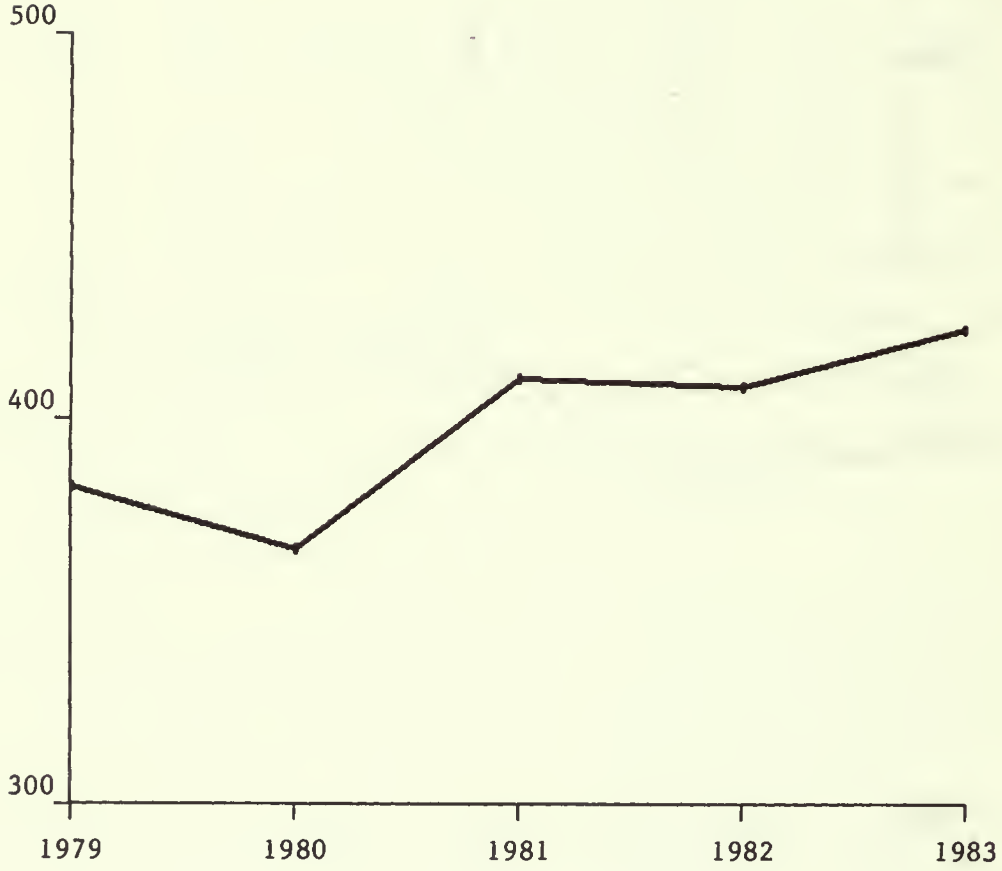
NUMBER OF NONRESIDENT VISITORS, MONTANA
1979 - 1983
(THOUSANDS)



SOURCE: UNIVERSITY OF MONTANA, BUREAU OF BUSINESS & ECONOMIC RESEARCH.

FIGURE 15

EXPENDITURES BY NONRESIDENT VISITORS, MONTANA
1979 - 1983
(MILLIONS OF CONSTANT 1983 DOLLARS)



SOURCE: UNIVERSITY OF MONTANA, BUREAU OF BUSINESS & ECONOMIC RESEARCH.

People travel for a variety of reasons. The most recent travel survey in Montana -- the Old West Commission Survey completed in 1980 -- reported that 30 percent of nonresident travel in the state in 1979 was travel for pleasure. Travel for pleasure is the usual definition for tourism. It should be noted that it is a rather narrow definition, by virtue of excluding the 23 percent of nonresident visitors in 1979 who said they were visiting friends and relatives.

Applying the 30 percent figure to expenditures and labor income suggests that nonresident tourists spent $127 million in Montana in 1983, and those expenditures generated $32 million in labor income (Table 14). If one chose to include travelers visiting friends and relatives as tourists, those numbers would be $224 million and $56 million, respectively.

There were approximately 10,500 jobs related to nonresident travel in 1983, compared to 9,000 in 1979. About one-third of the total was in the hotel-motel sector.

Average earnings per worker are considerably lower than in many other Montana industries because of lower wage rates and the large number of part-time and seasonal jobs. Nevertheless, the industry fills an important function by providing a large number of jobs for unskilled workers as well as those who desire part-time or seasonal work. It also offers entrepreneurial opportunities for people wanting to start their own businesses.

TABLE 14

EMPLOYMENT & LABOR INCOME ATTRIBUTABLE TO NONRESIDENT TRAVEL 1979 & 1983

	1979	1983	Percent Change
Number of Jobs	9,000	10,500	17
Labor Income (millions of constant 1983 dollars)			
Total	96	106	10
Tourist	29	32	10

SOURCE: University of Montana, Bureau of Business and Economic Research.

The emphasis here is on nonresident travel, because it is a basic industry. Nonresident travel accounts for just over half the total employment and income generated by travel in the state. The balance, of course, is created by Montanans traveling in Montana.

The following discussion of travel activity in Montana counties relates to both resident and nonresident travel. Travel employment in Montana is concentrated in a few of the larger counties: Yellowstone, Gallatin, Flathead, and Cascade account for almost half of total travel-related employment (Table 15). Yellowstone and Cascade counties, partly because of their size, are not so dependent upon travel as are Flathead and Gallatin counties. These latter two counties are located adjacent to Montana's two national parks, and together with Glacier, Park, Beaverhead, Madison, and Silver Bow counties (also near the parks) are the most heavily dependent upon travel (Table 16). About 23 percent of Glacier County's total employment is concentrated in travel-related businesses. In each of the other six counties, the proportion is approximately 10 percent.

The nonresident travel industry should continue to grow, especially tourist travel. This is suggested by continued national economic growth in the next few years, and demographic changes causing a rapid expansion in the number of affluent households and the demand for discretionary goods and services, including pleasure travel.

TABLE 15

CONCENTRATION OF TRAVEL-RELATED EMPLOYMENT IN MONTANA COUNTIES: 1983

County	Percent of State Travel Employment in County
Yellowstone	15
Gallatin	11
Flathead	11
Cascade	9
Silver Bow	7
Missoula	7
Glacier	7
Lewis and Clark	5
Park	3
Dawson	3

NOTE: Refers to both resident and nonresident travel.

SOURCE: University of Montana, Bureau of Business and Economic Research.

TABLE 16

MONTANA COUNTIES MOST HEAVILY DEPENDENT ON TRAVEL-RELATED EMPLOYMENT: 1983

County	Percent of County Employment Which is Travel-Related
Glacier	23
Park	12
Flathead	10
Gallatin	10
Beaverhead	10
Madison	10
Silver Bow	9
Dawson	8
Roosevelt	6
Richland	5

NOTE: Refers to both resident and nonresident travel.

SOURCE: University of Montana, Bureau of Business and Economic Research.

Competition for the travel dollar will be keen. The success of the Montana travel industry in attracting visitors to this state will determine the future contribution of nonresident travel to the economic base. It is, however, one area which appears to offer opportunities for growth.

CHAPTER IX

MONTANA'S OTHER BASIC INDUSTRIES

by

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University of Montana

Agriculture, mining, manufacturing, and nonresident travel are major basic industries in the private sector. But there are other industries which also contribute to the economic base, by bringing in money from outside the state. Among them are railroads and heavy construction in the private sector and the federal government in the public sector. Individual forecasts for these industries are not now included in the Montana Economic Reporting and Forecasting System, so the following discussions will present only general statements about prospects for each industry.

A. Federal Government:

The federal government has always been an important economic presence in Montana. It is a major employer, a major landholder, and a major supporter of public programs.

Among Montana's basic industries, the labor income of federal employees is exceeded only by combined earnings of all manufacturing employees. There, however, has been some decline in federal employment since 1979. The approximately 21,300 civilian and military employees in 1984 represented a decline of 2,400 or 10 percent since 1979 (Table 17). Labor income also was down in constant dollars (Table 18).

Military payrolls, which have mostly ranged between $90 million and $100 million after adjustment for inflation, are concentrated in Cascade County and are the mainstay of the Great Falls economy. They make up approximately one-fourth of total federal wages and salaries in Montana.

Civilian employment is concentrated in resource management agencies and the Postal Service. About 30 percent of the land area of Montana is federally owned. As a result, agencies such as the U.S. Forest Service and the Bureau of Land Management have traditionally maintained substantial staffs in Montana.

Increases in federal civilian employment over the next few years seem unlikely, given the fiscal problems of the federal government. Changes in military operations in the state are impossible to predict and of less consequence statewide, although of utmost concern to the Great Falls area.

The wages and salaries paid to federal employees are important to the Montana economy, but they make up only about 17 percent of total federal expenditures in the state. In fiscal 1983, the federal government spent over $2.2 billion in Montana (Table 19). Approximately one-fourth of that amount ($554 million) represented Social Security payments to individuals.

TABLE 17

EMPLOYMENT IN THE FEDERAL GOVERNMENT
1979 - 1984
(thousands)

Sector	1979	1980	1981	1982	1983	1984
Federal Government	23.7	23.1	21.8	21.2	21.6	21.3
Civilian	13.9	13.9	13.7	13.2	13.1	12.9
Military[a]	9.8	9.3	8.2	8.0	8.6	8.4

[a] Includes both active duty personnel and reservists.

SOURCES: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System for 1979 - 1983 data; Census and Economic Information Center, Montana Department of Commerce for 1984 estimates.

TABLE 18

LABOR INCOME FOR THE FEDERAL GOVERNMENT
1979 - 1984
(millions of constant 1983 dollars)

Sector	1979	1980	1981	1982	1983	1984
Federal Government	414	397	394	384	392	389
Civilian	317	308	305	293	299	296
Military[a]	97	89	89	91	93	93

[a] Includes both active duty personnel and reservists.

SOURCES: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System for 1979 - 1983 data; Census and Economic Information Center, Montana Department of Commerce for 1984 estimates.

TABLE 19

FEDERAL EXPENDITURES IN MONTANA
FISCAL 1983

Item	Amount
Total federal expenditures	$2,204,000,000
Grants to state and local governments	477,000,000
Highway trust fund	99,000,000
All other[a]	378,000,000
Wages and salaries[b]	367,000,000
Direct payments for individuals	1,057,000,000
Social Security payments	554,000,000
All other[c]	503,000,000
Procurement contract awards[d]	138,000,000
Defense	85,000,000
All other	53,000,000
Other programs	167,000,000
USDA programs[e]	150,000,000
All other	17,000,000

[a] Includes grants for agricultural, educational, environmental, health and human services, housing, unemployment insurance, labor training, and general revenue sharing programs plus payments in lieu of taxes and state and local shares of various receipts.

[b] Not comparable to the labor income figures in Table 18. Government labor income includes certain fringe benefits in addition to wages and salaries.

[c] Includes federal retirement payments, Medicare payments, federal payments for unemployment compensation and food stamps.

[d] Represents value of federal government procurement contracts for goods and services.

[e] United States Department of Agriculture programs.

SOURCE: U.S. Bureau of the Census, Federal Expenditures by State for Fiscal Year 1983.

The per capita figures in Table 20 make it easier to grasp the importance of federal expenditures and to compare patterns in Montana and the United States.

Total expenditures by the federal government in all states and territories, as reported by the Census Bureau, amounted to over $2,900 per capita in fiscal 1983. In Montana, these expenditures came to about $2,700.

The slightly lower Montana figure was due mostly to the small amount of procurement contract awards in the state including the lack of defense contracts. Direct payments to individuals, especially those other than Social Security benefits, were somewhat below the national average.

On the other hand, per capita grants to state and local governments and payments for "other programs" are higher than the national average.

The large discrepancy in payments under "other programs" is due to the importance of agricultural programs, especially price stabilization activities in Montana. Per capita grants to state and local governments are affected by the large amount of federal highway aid in relation to Montana's population, as well as smaller differences in numerous other programs.

Overall, Montana appears to receive more money from the federal government than its residents pay in federal taxes. According to an Office of Management and Budget study, in 1979 federal expenditures in

TABLE 20

PER CAPITA AMOUNTS OF FEDERAL EXPENDITURES IN MONTANA AND THE UNITED STATES, FISCAL 1983

Item	Montana	United States	Montana as a Percent of the U.S.
Total federal expenditures	$2,698	$2,932	92
Grants to state and local governments	583	390	149
Highway trust fund	121	36	326
All other[a]	462	354	131
Wages and salaries[b]	449	432	104
Direct payments for individuals	1,293	1,371	94
Social Security payments	679	694	98
All other[c]	614	677	91
Procurement contract awards[d]	169	669	25
Defense	103	535	19
All other	65	134	49
Other programs	204	70	291
USDA programs[e]	183	35	523
All other	21	35	60

[a] Includes grants for agricultural, educational, environmental, health and human services, housing, unemployment insurance, labor training, and general revenue sharing programs plus payments in lieu of taxes and state and local shares of various receipts.

[b] Not comparable to the labor income figures in Table 2. Government labor income includes certain fringe benefits in addition to wages and salaries.

[c] Includes federal retirement payments, Medicare payments, federal payments for unemployment compensation and food stamps.

[d] Represents value of federal government procurement contracts for goods and services.

[e] United States Department of Agriculture programs.

SOURCE: U.S. Bureau of the Census, Federal Expenditures by State for Fiscal Year 1983.

the state were $1.75 billion and the federal tax burden was $1.48 billion. The ratio of expenditures to taxes that year, thus, was 1.18, down from 1.28 in 1975 and 1.22 in 1976. All in all, it is clear that fiscal decisions by the federal government influence the Montana economy to a substantial degree.

B. Railroads:

Railroads have played an important role in Montana and until recently were a major employer and source of income.

In 1979, they provided approximately 7,400 high-paying jobs. Since then, employment and income have declined each year. Some of the loss reflects the shutdown of the Milwaukee Road. Other layoffs, in 1981 and 1982, were due to the recession. But reorganization, automation, and the big new labor-saving unit trains all have contributed to a permanent decline in railroad jobs.

Railroad employment in 1984 shrunk to about 4,000 workers, or 46 percent less than in 1979 (Table 21). Labor income fell 35 percent between 1979 and 1983; in constant 1983 dollars, the figures were $234 million in 1979 and $152 million in 1983 (Table 22). Railroad income information for 1984 is not currently available.

There appears to be little likelihood that railroad employment will reverse direction and begin to increase in the foreseeable future.

TABLE 21

EMPLOYMENT IN RAILROADS AND HEAVY CONSTRUCTION
1979 - 1984
(thousands)

Sector	1979	1980	1981	1982	1983	1984
Railroads	7.4	6.9	6.3	5.2	4.4	4.0
Heavy Construction	4.1	3.9	4.5	5.4	5.0	3.8

SOURCES: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System for 1979 - 1983 data; Census and Economic Information Center, Montana Department of Commerce for 1984 estimates.

TABLE 22

LABOR INCOME IN RAILROADS AND HEAVY CONSTRUCTION
1979 - 1984
(millions of constant 1983 dollars)

Sector	1979	1980	1981	1982	1983	1984
Railroads	234	216	194	170	152	N/A
Heavy Construction	126	109	139	158	142	100

N/A - Not available.

SOURCES: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System for 1979 - 1983 data; Census and Economic Information Center, Montana Department of Commerce for 1984 estimates.

C. Heavy Construction:

Heavy construction includes highway and street, water, sewer, pipeline, communication and power line, power plant, and industrial construction -- large projects which in Montana are generally funded from out-of-state.

The industry held up well during the recent recession thanks to energy-related activities. A pipeline in northeastern Montana and the Colstrip plants and transmission lines were responsible for increases in employment and income during the period of 1980 to 1982. Together with stepped-up oil exploration activities, energy-related construction kept some local economies in eastern Montana expanding while other parts of the state were in the depths of the recession.

In 1983 and 1984, increased highway construction statewide helped offset declining employment at Colstrip, but total employment and labor income in the industry decreased. In 1984, employment was somewhat lower than in 1979 (Table 21). Labor income in constant dollars had fallen 21 percent (Table 22).

Because heavy construction is dependent upon large projects which come and go, the level of activity in the industry in an economy so small as Montana's fluctuates wildly and is difficult to predict. With no large new projects known to be in the offing and the Colstrip project nearing completion, the industry's growth prospects appear limited. Highway construction may be the major source of heavy construction jobs and income over the next few years.

D. Other Industries:

The basic industries described thus far in this report make up most of Montana's economic base. They do not account for all basic activity, however. Other industries contribute to the base to the extent they sell goods or services out-of-state.

Obvious examples include sales by Billings wholesalers in Wyoming or a Missoula hospital serving an Idaho resident. While their impact on basic employment and income cannot be calculated precisely enough to be included in the statistical presentation, it should be acknowledged that such activities -- and others like them -- also contribute to Montana's economic base.

CHAPTER X

THE GROWTH OF EMPLOYMENT AND EARNINGS FOR MONTANA WOMEN

by

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It has been widely noted, both nationally and in Montana, that the most rapid growth of employment is occurring in the wholesale/retail trade and service, including tourism, sectors of the economy. This has a variety of implications for women's employment opportunities, some of which are spelled out below.

A. Employment Opportunities

Table 23 shows the changes in employment that occurred in Montana's industries between 1970 and 1980. In this table, industries are divided into basic and non-basic categories. Basic industries are those which export services or products beyond Montana's borders. Non-basic industries, also called derivative industries, produce for the instate market. The classification of industries in Table 23 follows these definitions. It should be noted, however, that some of the employment listed as non-basic, particularly the heavy construction component of the overall construction industry and retail trade/service employment derived from tourism, are usually considered basic. The available data unfortunately does not permit such employment to be counted separately.

TABLE 23

GROWTH IN EMPLOYMENT OF EXPERIENCED CIVILIAN LABOR FORCE (CLF) BY INDUSTRY, 1970-1980; DISTRIBUTION OF EXPERIENCED CIVILIAN LABOR FORCE BY INDUSTRY, BY SEX, 1970, MONTANA

Industry	Percent Change in Employment of Experienced CLF, 1970-1980	Percent of Female Experienced CLF, 1970	Percent of Male Experienced CLF, 1970
Basic:			
Agriculture & Forestry	5	4	18
Mining	59	(L)	4
Manufacturing	2	3	14
Railroads	-2	(L)	4
Federal Government	58	2	2
Total Basic	11	9	42
Nonbasic:			
Transportation & Public Utilities	51	4	7
Construction	47	1	10
All Trade	35	28	19
All Private Services[a]	45	54	19
State & Local Government	89	3	3
Total Nonbasic	44	91	58

(L) - Less than one-half of one percent.

[a] Includes Finance, Insurance, and Real Estate.

SOURCE: Computed from U.S. Department of Commerce, Bureau of the Census, 1980 Census of Population; Vol. 1, Chapter D, Part 28, Table 226.

It is particularly striking to note that employment in non-basic industries grew four times faster in this period than in basic industries. It is also apparent that the employment of women was concentrated in the most rapidly growing sectors of the economy. Civilian employment in general over this period grew by about 34 percent. Ninety-three percent of all women employed worked in industries that grew faster than this general rate. The comparable percentage for men was 64.

How important was this rapid growth of trade and services in creating employment opportunities for women? Consider Table 24. The right-hand column of Table 24 shows the actual increase in women's employment in each of Montana's industries between 1970 and 1980. The left-hand column, headed "General Employment Growth", shows how much employment would have increased if it had grown at the general rate of 34 percent. Any difference between these two numbers must be attributed to the factors that: a) the industry's employment grew faster or slower than employment in general; and/or b) women's share of employment in the industry increased or decreased (in fact, no decreases occurred). The effect of these two factors is shown in the second and third columns, respectively.

To look at an example, consider wholesale/retail trade. If female employment in trade had grown at the general rate of 34 percent, jobs would have increased by 7,999. Since trade grew more rapidly than that, if women had maintained their 1970 share of the additional growth, they would have had an additional 281 trade jobs. Finally, by increasing their share of total trade employment, women occupied another 3,853 jobs.

TABLE 24

CHANGE IN NUMBER OF WOMEN EMPLOYED BY INDUSTRY, 1970 TO 1980, MONTANA[a]

Industry	Change in Female Employment Attributed to:[b] General Employment Growth	Employment Growth Differential	Change in Women's Share	Actual Change in Female Employment
Agriculture & Forestry	1,031	-880	2,687	2,838
Mining	71	52	346	469
Manufacturing	925	-870	1,770	1,825
Railroads	121	-128	251	244
Federal Government	601	418	809	1,828
Transportation & Public Utilities	1,213	594	735	2,542
Construction	246	92	843	1,181
All Trade	7,999	281	3,853	12,133
All Private Services[c]	16,040	4,877	1,583	22,500
State & Local Government	938	1,498	1,451	3,887
All Industries	29,185	4,934	14,328	49,447

[a] Excludes military employment.
[b] For explanation, see text.
[c] Includes Finance, Insurance, and Real Estate.

SOURCE: Calculated from U.S. Department of Commerce, Bureau of the Census, 1980 Census of Population; Vol. 1, Chapter D, Part 28, Table 226.

Table 25 repeats this analysis and can be interpreted in a similar way, but refers to occupations rather than industries.

If we consider these two tables together, a number of interesting facts come out about the growth of employment for women in Montana. Between 1970 and 1980,

1) women's employment increased by about 50,000 jobs. Of these, about 30,000 can be attributed to general employment growth of 34 percent over the decade. The "extra" 20,000 jobs obtained by women were due in part to their maintaining their share of employment in fast-growing industries (6,000), and to their increasing their share of employment in all industries (14,000).

2) Of the 20,000 "extra" jobs obtained by women, about 3,000 were attributable to women maintaining their share of employment in fast-growing occupations. The remaining 17,000 resulted from women increasing their shares of almost all occupations.

3) Observations 1) and 2) taken together suggest that while much of female employment growth beyond the general increase in all employment has been in traditional women's industries, it has not been as concentrated in traditional women's occupations. In particular, the growth of employment in managerial occupations is noteworthy.

TABLE 25

CHANGE IN NUMBER OF WOMEN EMPLOYED BY OCCUPATION, 1970 TO 1980, MONTANA[a]

Occupation	Change in Female Employment Attributed to:[b]			
	General Employment Growth	Occupational Growth Differential	Change in Women's Share	Actual Change in Female Employment
Executive, Administrative, & Managerial	1,454	1,496	3,147	6,097
Professional Specialty	4,572	1,204	664	6,440
Technicians & Related Support	596	674	955	2,225
Sales	3,331	439	2,300	6,070
Administrative Support, including Clerical	8,550	3,475	2,715	14,740
Private Household Service	1,007	-2,683	-18	-1,694
Other Services	7,316	172	3,205	10,693
Farm, Forestry & Fishing	726	-726	1,764	1,764
Precision Production, Craft, & Repair	325	-18	848	1,155
Machine Operators, Assemblers, & Inspectors	698	-638	329	389
Transportation & Material Moving	137	-37	609	709
Handlers, Equipment Cleaners, Helpers, & Laborers	470	-245	634	859
All Occupations	29,182	3,113	17,152	49,447

[a] Excludes military employment.
[b] For explanation, see text.

SOURCE: Calculated from U.S. Department of Commerce, Bureau of the Census, 1980 Census of Population; Vol. 1, Chapter C, Part 28, General Social and Economic Characteristics, Montana, Table 61.

4) The growth of women's employment in basic industry is primarily attributable to an increase in women's share and has been responsible for relatively small employment gains.

5) Women have significantly increased their share of employment in the wholesale/retail trade sector of the economy.

6) The growth of women's share of employment in agriculture and forestry has been responsible for significant job creation.

7) As can be expected, almost all the growth in employment in occupations associated with basic industry resulted from the growth of women's shares of these occupations and were modest sources of total employment growth.

B. Earnings:

Table 26 lists 1969 and 1979 median earnings by industry and sex in constant 1979 dollars. Thus the earnings figures reported for 1969 are actual 1969 earnings inflated by the increase in averages prices that occurred in the subsequent decade, about 84 percent, as measured by the Personal Consumption Expenditure Price Deflator. Table 26 also reports the percentage change in constant dollar median earnings over the period.

Table 27 lists women's median earnings as a percentage of men's, by industry, for both 1969 and 1979. It also reports the percentage change in this percentage over the decade. The larger this percentage change, the greater the decline in the differential between men's and women's

TABLE 26

MEDIAN EARNINGS IN CONSTANT 1979 DOLLARS, BY INDUSTRY, BY SEX, 1969 & 1979, MONTANA[a]

	Women			Men		
Industry	1969	1979	Percent Change, 1969-1979	1969	1979	Percent Change, 1969-1979
Agriculture	3,027	3,235	7	8,235	8,232	(L)
Forestry	9,935	8,554	-14	14,226	15,102	6
Mining	8,402	8,712	4	14,241	17,796	25
Manufacturing	6,031	6,887	14	13,434	15,767	17
Construction	7,182	6,699	-7	13,775	13,288	-4
Transportation & Public Utilities[b]	8,311	9,924	19	14,858	17,386	17
Wholesale Trade	6,241	7,099	14	13,878	14,949	8
Retail Trade	4,164	4,325	4	11,145	9,982	-10
Finance, Insurance, & Real Estate	6,880	7,349	7	17,751	16,619	-6
Business & Repair Services	3,584	5,046	41	11,342	10,444	-8
Personal Services	2,478	3,364	36	8,645	6,906	-20
Entertainment & Recreation	1,562	3,119	100	6,970	5,531	-21
Professional Services	6,002	6,730	12	13,342	14,149	6
Government[b]	7,662	8,167	7	14,399	15,002	4

(L) - Less than one-half of one percent.

[a] Excludes military earnings.

[b] The Postal Service was classified as Government in 1969 and as Transportation in 1979.

SOURCE: Calculated from U.S. Department of Commerce, Bureau of the Census, 1980 Census of Population; Vol. 1, Chapter D, Part 28, Table 231, and 1970 Census of Population, Vol. 1, Chapter D, Part 28, Tables 188 and 189.

TABLE 27

MEDIAN EARNINGS OF WOMEN AS A PERCENTAGE OF MEDIAN EARNINGS OF MEN, BY INDUSTRY, 1969 AND 1979, MONTANA[a]

Industry	Median Earnings of Women as a Percentage of Median Earnings of Men		Percent Change[b] 1969-1979
	1969	1979	
Agriculture	37	39	5
Forestry	70	57	-19
Mining	60	49	-18
Manufacturing	45	44	-2
Construction	52	50	-4
Transportation & Public Utilities	56	57	2
Wholesale Trade	45	47	4
Retail Trade	37	43	16
Finance, Insurance, & Real Estate	39	44	13
Business & Repair Services	32	48	50
Personal Services	29	49	70
Entertainment & Recreation	22	56	155
Professional Services	45	48	7
Government	53	54	2

[a] Excludes military earnings.
[b] For explanation, see text.

SOURCE: Calculated from values in Table 26.

earnings (if the percentage change is negative, the differential between men's and women's earnings grew).

These figures permit the following observations:

1) As is well known, earnings in the trade and service sectors in which women's employment is concentrated tend to be lower than in other industries. This is not generally true, however, of Wholesale Trade or Finance, Insurance, and Real Estate.

2) In general, the gap between men's and women's earnings in basic industries tended to widen between 1969 and 1979. Agriculture, however, was an exception.

3) In all categories of trade and service employment, the gap between men's and women's earnings narrowed over the decade. This is consistent with the observation that women were moving into non-traditional occupations in such industries.

4) In general, the increase in women's earnings (with respect to men's) was best in those sectors in which their employment growth was concentrated.

5) In all industries, women earn less than men. In 1969, the gap tended to be greater in non-basic than in basic industry. This difference was reduced in the following decade.

C. Conclusions:

For a variety of reasons beyond the scope of this analysis, women's employment in Montana has historically been concentrated in non-basic industries, particularly wholesale/retail trade and services. This is still substantially true today.

As a result of this pattern, women have experienced earning opportunities that are considerably inferior to those of men. Earnings of men in non-basic industry were substantially above those of women, and earnings in basic industry (where employment is predominantly male) were and still are substantially above those in non-basic industry.

Nevertheless, the recent relatively rapid growth of non-basic industry has mitigated this pattern. The expansion of services and wholesale/retail trade has contributed substantially to an increase in women's employment, occupational mobility, and real earnings and to a decrease in the differential between women's and men's earnings.

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